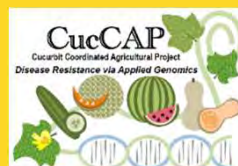


# 2019 Orange Flesh Melon Cultigen Evaluations



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Horticulture Series No. 234



# **2019 North Carolina Orange Flesh and Specialty Melon Cultigen Evaluations**

**Hort. Series # 234**

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## **General Cultural Practices**

This melon study was grown using recommended practices for commercial melon production in North Carolina. All plots in the study used black plastic mulch and were fertigated with drip irrigation. Furthermore, pesticides used on all plots were chemicals labeled for use on that crop.

## **Acknowledgments**

We gratefully acknowledge the assistance of Cathy Herring (Superintendent) and Charles Barrow (Horticulture Crops Supervisor), Central Crops Research Station, Clayton, NC, as well as, the personnel at the research station for their help to establish, maintain, and harvest the cultigen evaluation trials. We want to also acknowledge the following summer research assistants for their help with the study: Maxton Collins, Benjamin Indermaur, Ryan Jarrett, Kimberly McAllister, Tanner Seay and Emma Westbrook. The cooperation and support of the following seed companies and university is also greatly appreciated: HM Clause; Rijk Zwaan; Sakata Seed USA; Seminis; Syngenta Seeds, Inc.; Texas A&M University; United Genetics and VoloAgri / US Agriseeds.

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### **Disclaimer**

This publication presents data from the cultigen evaluation study conducted during 2019. Information in this report is believed to be reliable but should **not** be relied upon as a sole source of information. Limited accompanying detail is included but excludes some pertinent information, which may aid interpretation.

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## **2019 North Carolina Orange Flesh and Specialty Melon Cultigen Study Evaluation, Central Crops Research Station, Clayton, NC**

### **Introduction**

The acreage for melon production in North Carolina has not been published in recent years, however, it is estimated that 3,000 to 4,000 acres are produced in the state. In 2017 a survey of US growers estimated orange flesh melon production was 58,000 acres (USDA, National Agriculture Statistics Service). Since 2013, the US orange flesh melon crop has seen significant decreases in acreage (2013, 74,000 acres valued at 319 million) to 2017 when US acreage was reported to be 58,000 with a total crop value of 267 million. Further reporting showed domestic orange flesh melon prices have steadily declined from their peak of 0.25/lb in 1980 to a season-average of 0.15/lb in 2018 (USDA, National Agriculture Statistics Service). The majority of melons grown in North Carolina are eastern type with ‘Athena’ being the principle cultivar produced for more than two decades. In addition to the eastern shipper type orange flesh melon, other orange flesh melons being grown on much smaller acreage include Extended Shelf Life (ESL); Long Shelf Life (LSL) melons, often termed Harper melons; and a third type termed Italian (Tuscan) melons. The ESL or LSL melons, as the name suggests, will hold for a longer period than the eastern type melons. Flesh firmness and sweetness tend to be higher in the ESL or LSL type melons than in eastern type melons. Greater flesh firmness allows the fruit to hold up better over time. This trait increases the shipability, a term often referred to as giving the fruit ‘better legs’. It can be more difficult to determine readiness on LSL melons and this has delayed willingness from growers in part to move into larger scale production of these melons. More recently, the release of new cultigens with ESL traits have performed well for growers and have received favorable support from consumers. Two such examples would be ‘Accolade’ and ‘Astound’ that were released by Syngenta in 2016. It is reported that these new cultivars comprise as much as 30% of the market, taking some market share from ‘Athena’. The Italian (Tuscan) type melons tend to split easier than the ESL/LSL or Eastern types and more intense management of the crop harvest may be necessary in order to minimize fruit loss due to splitting. In spite of these challenges with ESL/LSL and Italian (Tuscan) type melons, North Carolina growers have had some success in producing and marketing these newer melon types. In 2019 several new cultigens were evaluated in our melon field study that included 18 advanced lines or cultivar entries (cultigens) from 8 seed companies and 1 University. All entries were evaluated for yields, earliness, and various other qualities.

### **Materials and Methods**

In February and March commercial seed companies were contacted to obtain seed for the orange flesh melon cultigen evaluation study. Seed were sown into 72 cell Poly trays to grow transplants (Hummert Int.; Earth City, MO) on 29 March 2019. The planting medium used was a Fine Germinating Mix, a commercial soilless mix (SunGro, Agawam, MA). In October 2018 the field study area (0.28 acre) was fumigated with Telone C-17 at 10 gal/acre and a cover crop was established. Based on soil test results lime was applied at 500 lbs/acre to adjust soil pH on 20 March 2019.



A complete fertilizer (12-6-24 @ 400 lbs/ac) was broadcast applied and black polyethylene plastic mulch (0.70 mil thick high density plastic film, 48 inches wide; B.B. Hobbs, Clinton, NC) was laid in the field on 24 April. Herbicide products, Prefar (5 qt/ac), Sonolan (4 pt/ac) and Honcho Plus (1 pt/ac) were applied to row middles for pre-emergent weed control on 30 April. Orange flesh melon transplants were approximately 3 weeks old when placed in a “hardening” greenhouse for 7 days prior to being established in the field on 2 May.

Plot size was one row with 10 plants per plot (20 ft) with in-row spacing of 2 feet and between-row spacing of 5 feet. Field arrangement for the orange flesh melon cultigen study was a Randomized Complete Block Design (RCBD) with four replications. Plots that were missing plants were replanted approximately 7 days after transplanting to achieve 100% stand, in most cases. Drip irrigation was utilized (NETAFIM, 12 inch spacing, 0.24 gal/hr; NETAFIM, Tel Aviv, Israel) throughout the growing season. Fertigation with 4-0-8 liquid fertilizer was initiated 6 days after planting and applied weekly, thereafter. The first application of liquid fertilizer (3 gal) was applied through the drip tube on 8 May and the last application (2 gal) was applied 17 July. Fertilizer was applied either preplant or through fertigation in this study. Total amount of fertilizer applied through fertigation for the season was 79 lbs/ac of N and 158 lbs/ac of K<sub>2</sub>O. The total amount of fertilizer applied for the entire growing season was 127 lbs/ac of N, 24 lbs/ac of P<sub>2</sub>O<sub>5</sub> and 254 lbs/ac of K<sub>2</sub>O.

Insecticides were applied as needed throughout the growing season beginning 10 May and followed by subsequent applications on 29 May; 6, 12, 19 and 26 June 2019. The following insecticide products were alternated throughout the season to avoid potential resistance development in insect species; Asana, Assail and FanFare. Similarly, the following fungicide products were applied; Previcur Flex Pristine, Procure, Proline, Ranman, Switch and Zampro; and applied on the following dates; 29 May; 6, 12, 19, and 26 June; 10 and 17 July 2019.

There were 14 total harvests of the orange flesh melon cultigens. The first harvest was 24 June 2019 and the fourteenth harvest was 26 July 2019. Harvests occurred three times per week on Monday, Wednesday and Friday. Evaluations of each melon entry included; yield, fruit size, production earliness, soluble solids (using a digital refractometer, Atago, Vernon Hills, IL), fruit shape and size and interior flesh firmness. Flesh firmness was measured (recorded in pounds) by using a Penetrometer FT 011 with a 5/16” plunger tip, (QA Supplies LLC, Norfolk, VA). Melon samples were obtained by cutting through the ground spot of the fruit, lengthwise, from the fruit’s stem end to blossom end. Flesh firmness (measured in pressure) measurements were taken between the interior fruit cavity and the rind (near fruit bottom or ground spot and one from the top of the fruit) on one-half of the cut fruit. The reported measures on flesh firmness are an average of the two sample areas from five fruit per plot (10 total fruit firmness measures were obtained per plot). The majority of quality measurements were taken when the melons became ripe between the first and fourth harvests for a given cultigen.

The field and growing conditions throughout the harvest period were considered typical for eastern North Carolina. Rainfall for the season was above average rainfall throughout the season. Optimal ambient temperatures allowed for good plant growth and fruit set within all the cultigen plots. This study was established in the field nearly 3 weeks earlier than in 2018. Eleven entries included in the study were submitted from Texas A&M. Those cultigens were

Davinci, F39, HD 150, HD 252, Infinite Gold, OC 164, TH2, TH3, TH4, TH5 and TH6. Fruits from these cultigens were shipped to Texas and Arizona to be evaluated as part of a food safety and soil borne pathogen evaluation study. HD 150 and HD 252 are honeydew melons, SFR3079 and SFR3083 are specialty melons, OC 164 is an orange casaba melon, while the other thirteen entries were orange flesh melons.

## **Results**

In the early harvests (1-4), entries that yielded over 100 cwt per acre were Athena, HMX 4606, SFR 3079, and SFR 3083 (Table 1). The highest yielding entries based on fruit numbers that exceeded 2,000 fruit per acre for early harvests (1-4) were Athena, F39, HMX 4606, SFR 3079 and SFR 3083 (Table 2). With the exception of TH2, TH3 and OC 164, the accepted market size category of 3.1 to 7 lbs. had the highest percentage of fruit produced from the early yielding entries. A high percentage (69% and 100%, respectively) of fruit produced by TH2 and TH3 weighed less than 3 lbs. in the early harvest 1-4. Fruit produced by OC 164 all weighed greater than 7.1 lbs and may be acceptable in commercial specialty melon markets.

The highest yielding entries for fruit weight, in the mid-season harvests (5-9), that yielded greater than or equal to 400 cwt per acre were Caribbean Jackpot, HD 150, HD 252, TH3, TH6, USAM 14836 and USAM 16203 (Table 5). The entries that yielded the highest (> 8,000 fruit number) in the mid-season (harvests 5-9) were Caribbean Jackpot, Davinci, Infinite Gold, F39, HD 150, HD 252, TH2, TH3, TH5, TH6, USAM 14836, and USAM 16203 (Table 6). Most fruits produced from these entries were between 3.1 to 7 lbs., with the exception of SFR3079, which produced fruits  $\leq$  3 lbs. (Tables 7 & 8). Orange flesh fruits that weigh  $\leq$  3 lbs. would ordinarily be culled in eastern US markets, however, other markets in the US sell smaller sized fruits. Smaller sized white flesh specialty melons may be acceptable in these alternative markets.

Some of the latest yielding (harvests 10-14) melon entries that exceeded 75 cwt per acre were SFR 3083 and TH2. (Table 9). These were likely fruit that reset after the initial earlier harvests. Average fruit size for these entries were 3.4 and 3.5 lbs., respectively. (Table 9). Davinci, F39, and SFR 3079 produced fruits that weighed mostly  $\leq$  3 lbs. and OC164 yielded fruits that weighed mostly above 7.1 lbs. (Table 11).

The highest yielding entries across all harvests, in terms of tonnage ( $\geq$  475 cwt/acre) were Athena, Caribbean Jackpot, HD 252, SFR 3079, TH2, TH3, USAM 14836, and USAM 16203 (Table 13). The melon entries that produced the greatest number of fruit per acre (> 12,000) across all harvests were Davinci, F39, SFR3079, SFR3083, TH2, TH3, and TH6 (Table 14).

## **Other Support**

In addition to the seed companies, this program has been supported by the College of Agriculture & Life Sciences, the North Carolina Agriculture Research Service, and the North Carolina Cooperative Extension Service.



**Figure 1.** Photographs of orange flesh and specialty melons from replicated entries. **Clayton, NC, 2019.**





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**Figure 1.** Photographs of orange flesh and specialty melons from replicated entries. **Clayton, NC, 2019.**



TH3 No fruit available at time photos were taken

**Figure 1.** Photographs of orange flesh and specialty melons from replicated entries. **Clayton, NC, 2019.**





**Figure 1.** Photographs of orange flesh and specialty melons from replicated entries. **Clayton, NC, 2019.**





**Figure 1.** Photographs of orange flesh and specialty melons from replicated entries. **Clayton, NC, 2019.**



**Table 1. Orange flesh and specialty melon cultigen study yields, Fruit weight, (x 100), per acre for early<sup>1</sup> season harvests 1-4. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category</b>			<b>Totals<sup>2</sup></b>	<b>Avg. Wt.<sup>3</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>		
ATHENA	9	155	0	164	5.1
CARIBBEAN JACKPOT	0	0	0	0	0.0
DAVINCI	3	4	0	7	3.1
INFINITE GOLD	0	18	0	18	4.2
F39	31	52	0	83	3.1
HD 150	0	6	0	6	5.8
HD 252	0	0	0	0	0.0
HMX 4606	27	255	0	282	3.8
OC 164	0	0	18	18	8.1
SFR3079	116	194	0	310	3.1
SFR3083	70	240	0	310	3.5
TH2	20	9	0	29	2.9
TH3	3	0	0	3	2.6
TH4	6	8	0	14	3.3
TH5	17	15	0	32	2.8
TH6	13	12	0	24	3.2
USAM 14836	6	9	0	15	3.3
USAM 16203	0	13	9	21	6.6
Average	18	55	1	74	4
<b>LSD (0.05)</b>	<b>26</b>	<b>50</b>	<b>27</b>	<b>54</b>	<b>1.3</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Totals include all fruit size categories and is rounded to the nearest whole number.

<sup>3</sup> Average fruit weights were determined using total weights and numbers from respective harvests

**Table 2. Orange flesh and specialty melon cultigen study yields, Fruit number per acre for early<sup>1</sup> season harvests 1-4. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category<sup>2</sup></b>			<b>Totals<sup>3</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>	
ATHENA	327	3049	0	3376
CARIBBEAN JACKPOT	0	0	0	0
DAVINCI	109	109	0	218
INFINITE GOLD	0	436	0	436
F39	1307	1307	0	2614
HD 150	0	109	0	109
HD 252	0	0	0	0
HMX 4606	1198	6207	0	7405
OC 164	0	0	218	218
SFR3079	4792	5336	0	10128
SFR3083	2940	5881	0	8821
TH2	980	218	0	1198
TH3	109	0	0	109
TH4	218	218	0	436
TH5	762	436	0	1198
TH6	545	327	0	871
USAM 14836	218	218	0	436
USAM 16203	0	218	109	327
Average	750	1337	18	2106
<b>LSD (0.05)</b>	<b>1172</b>	<b>1149</b>	<b>347</b>	<b>1500</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Each number for fruit size category and total is rounded to the nearest whole number

<sup>3</sup> Totals include all fruit size categories.

**Table 3. Orange flesh and specialty melon** cultigen study yields; **Percent<sup>1</sup>** fruit **weight** per indicated size category - **early season** harvests 1-4.  
**Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category</b>		
	<b><u>≤ 3.0 lb</u></b>	<b><u>3.1 - 7.0 lb</u></b>	<b><u>≥ 7.1 lb</u></b>
ATHENA	5	95	0
CARIBBEAN JACKPOT	0	0	0
DAVINCI	41	59	0
INFINITE GOLD	0	100	0
F39	37	63	0
HD 150	0	100	0
HD 252	0	0	0
HMX 4606	10	90	0
OC 164	0	0	100
SFR3079	37	63	0
SFR3083	23	77	0
TH2	69	31	0
TH3	100	0	0
TH4	40	60	0
TH5	53	47	0
TH6	52	48	0
USAM 14836	41	59	0
USAM 16203	0	59	41
<b>Average</b>	<b>28</b>	<b>53</b>	<b>8</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 4. Orange flesh and specialty melon cultigen study yields; Percent<sup>1</sup> fruit number per indicated size category - early season harvests 1-4. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category</b>		
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>
ATHENA	10	90	0
CARIBBEAN JACKPOT	0	0	0
DAVINCI	50	50	0
INFINITE GOLD	0	100	0
F39	50	50	0
HD 150	0	100	0
HD 252	0	0	0
HMX 4606	16	84	0
OC 164	0	0	100
SFR3079	47	53	0
SFR3083	33	67	0
TH2	82	18	0
TH3	100	0	0
TH4	50	50	0
TH5	64	36	0
TH6	63	38	0
USAM 14836	50	50	0
USAM 16203	0	67	33
<b>Average</b>	<b>34</b>	<b>47</b>	<b>7</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 5. Orange flesh and specialty melon** cultigen study yields, fruit **weight**, (x 100), per acre for **mid<sup>1</sup> season** harvests 5-9. **Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>			<u>Totals <sup>2</sup></u>	<u>Avg. Wt. <sup>3</sup></u>
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>		
ATHENA	7	295	25	327	4.9
CARIBBEAN JACKPOT	3	402	58	463	5.0
DAVINCI	78	305	0	383	3.3
INFINITE GOLD	5	380	0	385	4.5
F39	96	166	0	263	3.1
HD 150	25	374	8	407	4.3
HD 252	7	464	0	471	4.8
HMX 4606	24	62	0	86	3.8
OC 164	3	274	100	377	5.8
SFR3079	39	37	0	76	2.9
SFR3083	26	39	0	65	3.2
TH2	85	276	0	361	3.5
TH3	30	407	8	445	3.9
TH4	16	224	0	240	3.9
TH5	40	332	0	372	3.9
TH6	166	234	0	400	2.7
USAM 14836	21	427	0	448	4.3
USAM 16203	4	359	76	439	5.4
Average	38	281	15	334	4
<b>LSD (0.05)</b>	<b>40</b>	<b>73</b>	<b>39</b>	<b>69</b>	<b>0.4</b>

<sup>1</sup> Mid harvests (5-9) : 3 July - 12 July (62 - 71 days after planting).

<sup>2</sup> Totals include all fruit size categories and is rounded to the nearest whole number.

<sup>3</sup> Average fruit weights were determined using total cumulative weights and numbers from respective harvests.



**Table 6. Orange flesh and specialty melon cultigen study yields, Fruit number per acre for mid<sup>1</sup> season harvests 5-9. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category<sup>2</sup></b>			<b>Totals<sup>3</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>	
ATHENA	327	5990	327	6643
CARIBBEAN JACKPOT	109	8385	762	9257
DAVINCI	3158	8494	0	11652
INFINITE GOLD	218	8276	0	8494
F39	4138	4356	0	8494
HD 150	1089	8168	109	9365
HD 252	327	9474	0	9801
HMX 4606	980	1307	0	2287
OC 164	109	5118	1307	6534
SFR3079	1634	1089	0	2723
SFR3083	1089	980	0	2069
TH2	3703	6534	0	10237
TH3	1198	9910	109	11217
TH4	653	5445	0	6098
TH5	1634	8059	0	9692
TH6	8930	6098	0	15028
USAM 14836	871	9692	0	10563
USAM 16203	218	6861	980	8059
Average	1688	6346	200	8234
<b>LSD (0.05)</b>	<b>2059</b>	<b>1841</b>	<b>498</b>	<b>2220</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Each number for fruit size category and total is rounded to the nearest whole number

<sup>3</sup> Totals include all fruit size categories.

**Table 7. Orange flesh and specialty melon cultigen study yields; Percent<sup>1</sup> fruit weight per indicated size category - mid season harvests 5-9. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category</b>		
	<b><u>≤ 3.0 lb</u></b>	<b><u>3.1 - 7.0 lb</u></b>	<b><u>≥ 7.1 lb</u></b>
ATHENA	2	90	8
CARIBBEAN JACKPOT	1	87	13
DAVINCI	20	80	0
INFINITE GOLD	1	99	0
F39	37	63	0
HD 150	6	92	2
HD 252	1	99	0
HMX 4606	28	72	0
OC 164	1	73	27
SFR3079	51	49	0
SFR3083	40	60	0
TH2	24	76	0
TH3	7	91	2
TH4	7	93	0
TH5	11	89	0
TH6	41	59	0
USAM 14836	5	95	0
USAM 16203	1	82	17
<b>Average</b>	<b>16</b>	<b>81</b>	<b>4</b>

<sup>1</sup> Percentages for each fruit size category and for each cultigen were rounded to the nearest whole number.

**Table 8. Orange flesh and specialty melon** cultigen study yields; **Percent<sup>1</sup>** fruit **number** per indicated size category - **mid season** harvests 5-9. **Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category</b>		
	<b><u>≤ 3.0 lb</u></b>	<b><u>3.1 - 7.0 lb</u></b>	<b><u>≥ 7.1 lb</u></b>
ATHENA	5	90	5
CARIBBEAN JACKPOT	1	91	8
DAVINCI	27	73	0
INFINITE GOLD	3	97	0
F39	49	51	0
HD 150	12	87	1
HD 252	3	97	0
HMX 4606	43	57	0
OC 164	2	78	20
SFR3079	60	40	0
SFR3083	53	47	0
TH2	36	64	0
TH3	11	88	1
TH4	11	89	0
TH5	17	83	0
TH6	59	41	0
USAM 14836	8	92	0
USAM 16203	3	85	12
<b>Average</b>	<b>22</b>	<b>75</b>	<b>3</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 9. Orange flesh and specialty melon** cultigen study yields, Fruit weight, (x 100), per acre for **late<sup>1</sup> season** harvests 10-14. **Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>			<u>Totals<sup>2</sup></u>	<u>Avg. Wt.<sup>3</sup></u>
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>		
ATHENA	0	30	0	30	4.6
CARIBBEAN JACKPOT	0	12	0	12	5.1
DAVINCI	15	5	0	19	3.5
INFINITE GOLD	3	46	0	48	4.2
F39	26	12	0	38	2.3
HD 150	9	45	0	54	3.7
HD 252	4	23	17	44	4.6
HMX 4606	17	50	0	66	3.4
OC 164	3	21	34	58	5.3
SFR3079*	127	53	0	181	2.4
SFR3083	24	63	0	87	3.4
TH2	36	70	0	106	3.5
TH3	9	42	0	51	3.8
TH4	11	56	0	67	3.5
TH5	8	30	0	38	3.6
TH6	19	19	0	38	2.6
USAM 14836	3	10	0	13	3.5
USAM 16203	3	24	18	45	5.2
Average	18	34	4	55	3.8
<b>LSD (0.05)</b>	<b>24</b>	<b>42</b>	<b>66</b>	<b>55</b>	<b>1.8</b>

<sup>1</sup> Late harvests (10-14) : 15 July - 26 July (74 - 85 days after planting).

<sup>2</sup> Cumulative total includes all fruit size categories.

<sup>3</sup> Average fruit weights were determined using total weights and numbers from respective harvests.

**Table 10. Orange flesh and specialty melon cultigen study yields, Fruit number per acre for late<sup>1</sup> season harvests 10-14. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category<sup>2</sup></b>			<b>Totals<sup>3</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>	
ATHENA	0	653	0	653
CARIBBEAN JACKPOT	0	218	0	218
DAVINCI	545	109	0	653
INFINITE GOLD	109	1089	0	1198
F39	1198	327	0	1525
HD 150	327	1089	0	1416
HD 252	218	436	218	871
HMX 4606	653	1307	0	1960
OC 164	109	545	436	1089
SFR3079	5881	1525	0	7405
SFR3083	980	1634	0	2614
TH2	1525	1851	0	3376
TH3	327	980	0	1307
TH4	436	1416	0	1851
TH5	327	762	0	1089
TH6	871	545	0	1416
USAM 14836	109	218	0	327
USAM 16203	109	436	218	762
Average	762	841	48	1652
<b>LSD (0.05)</b>	<b>1011</b>	<b>1039</b>	<b>833</b>	<b>1448</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Each number for fruit size category and total is rounded to the nearest whole number

<sup>3</sup> Totals include all fruit size categories.

**Table 11. Orange flesh and specialty melon** cultigen study yields; **Percent<sup>1</sup>** fruit **weight** per indicated size category - **late season** harvests 10-14. **Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>		
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>
ATHENA	0	100	0
CARIBBEAN JACKPOT	0	100	0
DAVINCI	77	23	0
INFINITE GOLD	5	95	0
F39	69	31	0
HD 150	17	83	0
HD 252	9	52	39
HMX 4606	25	75	0
OC 164	5	37	58
SFR3079	70	30	0
SFR3083	27	73	0
TH2	34	66	0
TH3	17	83	0
TH4	16	84	0
TH5	21	79	0
TH6	50	50	0
USAM 14836	21	79	0
USAM 16203	6	53	40
<b>Average</b>	<b>26</b>	<b>66</b>	<b>8</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 12. Orange flesh and specialty melon** cultigen study yields; **Percent<sup>1</sup>** fruit **number** per indicated size category - **late season** harvests 10-14.  
**Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>		
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>
ATHENA	0	100	0
CARIBBEAN JACKPOT	0	100	0
DAVINCI	83	17	0
INFINITE GOLD	9	91	0
F39	79	21	0
HD 150	23	77	0
HD 252	25	50	25
HMX 4606	33	67	0
OC 164	10	50	40
SFR3079	79	21	0
SFR3083	38	63	0
TH2	45	55	0
TH3	25	75	0
TH4	24	76	0
TH5	30	70	0
TH6	62	38	0
USAM 14836	33	67	0
USAM 16203	14	57	29
<b>Average</b>	<b>34</b>	<b>61</b>	<b>5</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.



**Table 13. Orange flesh and specialty melon cultigen study yields<sup>1</sup>, Fruit weight, (x 100), per acre across all 14 harvests. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category<sup>2</sup></b>			<b>Totals<sup>3</sup></b>	<b>Avg. Wt.<sup>4</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>		
ATHENA	16	480	25	521	4.9
CARIBBEAN JACKPOT	3	414	58	475	5.0
DAVINCI	96	313	0	409	3.3
INFINITE GOLD	7	444	0	452	4.5
F39	153	230	0	384	3.0
HD 150	34	425	8	467	4.3
HD 252	11	487	17	515	4.8
HMX 4606	67	367	0	434	3.7
OC 164	6	295	152	453	5.8
SFR3079	283	284	0	567	2.8
SFR3083	120	342	0	461	3.4
TH2	142	355	0	496	3.4
TH3	42	449	8	499	4.0
TH4	32	289	0	321	3.8
TH5	65	377	0	442	3.7
TH6	198	265	0	463	2.7
USAM 14836	30	446	0	475	4.2
USAM 16203	7	395	103	505	5.5
Average	73	370	21	463	4.1
<b>LSD (0.05)</b>	<b>48</b>	<b>72</b>	<b>39</b>	<b>65</b>	<b>0.4</b>

<sup>1</sup> Melons were harvested 3 times per week.

<sup>2</sup> Each number for fruit size category and total is rounded to the nearest whole number

<sup>3</sup> Totals include all fruit size categories.

<sup>4</sup> Average fruit weights were determined using total cumulative weights and numbers from respective harvests.

**Table 14. Orange flesh and specialty melon cultigen study yields<sup>1</sup>, Fruit number per acre across all 14 harvests. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Fruit size category<sup>2</sup></b>			<b>Totals<sup>3</sup></b>
	<b>≤ 3.0 lb</b>	<b>3.1 - 7.0 lb</b>	<b>≥ 7.1 lb</b>	
ATHENA	653	9692	327	10672
CARIBBEAN JACKPOT	109	8603	762	9474
DAVINCI	3812	8712	0	12524
INFINITE GOLD	327	9801	0	10128
F39	6643	5990	0	12632
HD 150	1416	9365	109	10890
HD 252	545	9910	218	10672
HMX 4606	2831	8821	0	11652
OC 164	218	5663	1960	7841
SFR3079	12306	7950	0	20255
SFR3083	5009	8494	0	13504
TH2	6207	8603	0	14810
TH3	1634	10890	109	12632
TH4	1307	7079	0	8385
TH5	2723	9257	0	11979
TH6	10346	6970	0	17315
USAM 14836	1198	10128	0	11326
USAM 16203	327	7514	1307	9148
Average	3201	8525	266	11991
<b>LSD (0.05)</b>	<b>2338</b>	<b>1835</b>	<b>506</b>	<b>2045</b>

<sup>1</sup> Melons were routinely harvested 3 times per week.

<sup>2</sup> Each number for fruit size category and total is rounded to the nearest whole number

<sup>3</sup> Totals include all fruit size categories.

**Table 15. Orange flesh and specialty melon** cultigen study yields; **Percent<sup>1</sup>** fruit **weight** per indicated size category - **Cumulative** harvests (14).  
**Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>		
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>
ATHENA	3	92	5
CARIBBEAN JACKPOT	1	87	12
DAVINCI	23	77	0
INFINITE GOLD	2	98	0
F39	40	60	0
HD 150	7	91	2
HD 252	2	95	3
HMX 4606	16	84	0
OC 164	1	65	33
SFR3079	50	50	0
SFR3083	26	74	0
TH2	29	71	0
TH3	8	90	2
TH4	10	90	0
TH5	15	85	0
TH6	43	57	0
USAM 14836	6	94	0
USAM 16203	1	78	20
<b>Average</b>	<b>16</b>	<b>80</b>	<b>4</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 16. Orange flesh and speciality melon** cultigen study yields; **Percent<sup>1</sup>** fruit **number** per indicated size category - **Cumulative** harvests (14).  
**Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Fruit size category</u>		
	<u>≤ 3.0 lb</u>	<u>3.1 - 7.0 lb</u>	<u>≥ 7.1 lb</u>
ATHENA	6	91	3
CARIBBEAN JACKPOT	1	91	8
DAVINCI	30	70	0
INFINITE GOLD	3	97	0
F39	53	47	0
HD 150	13	86	1
HD 252	5	93	2
HMX 4606	24	76	0
OC 164	3	72	25
SFR3079	61	39	0
SFR3083	37	63	0
TH2	42	58	0
TH3	13	86	1
TH4	16	84	0
TH5	23	77	0
TH6	60	40	0
USAM 14836	11	89	0
USAM 16203	4	82	14
<b>Average</b>	<b>23</b>	<b>75</b>	<b>3</b>

<sup>1</sup> Percentages for each fruit size category for each cultigen were rounded to the nearest whole number.

**Table 17. Orange flesh and specialty melon cultigen study; percentage of fruit weight harvested among varying harvest intervals. Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Company</b>	<b>Percentage harvested among harvest periods</b>		
		<b>Early Harvests<sup>1</sup></b>	<b>Mid Harvests<sup>2</sup></b>	<b>Late Harvests<sup>3</sup></b>
ATHENA	Syngenta(Control)	31	63	6
CARIBBEAN JACKPOT	Rijk Zwaan	0	98	2
DAVINCI*	Sakata (Texas A & M)	2	94	5
INFINITE GOLD*	Sakata (Texas A & M)	4	85	11
F39	Texas A & M	22	68	10
HD 150	Texas A & M	1	87	12
HD 252	Texas A & M	0	91	9
HMX 4606	HM Clause	65	20	15
OC 164	Texas A & M	4	83	13
SFR3079	United Genetics	55	13	32
SFR3083	United Genetics	67	14	19
TH2	Texas A & M	6	73	21
TH3	Texas A & M	1	89	10
TH4	Texas A & M	4	75	21
TH5	Texas A & M	7	84	9
TH6	Texas A & M	5	87	8
USAM 14836	VoloAgri	3	94	3
USAM 16203	VoloAgri	4	87	9
<b>Average</b>		<b>16</b>	<b>73</b>	<b>12</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Mid harvests (5-9) : 3 July - 12 July (62 - 71 days after planting).

<sup>3</sup> Late harvests (10-14) : 15 July - 26 July (74 - 85 days after planting).

Study was planted 2 May, 2019.

\* These entries are seed developed by Sakata but were submitted by Texas A&M University.

**Table 18. Orange flesh and specialty melon** cultigen study; **percentage** of fruit **number** harvested among varying harvest intervals. **Clayton, NC, 2019.**

<b>Cultigen</b>	<b>Company</b>	<b>Percentage harvested among harvest periods</b>		
		<b><u>Early Harvests<sup>1</sup></u></b>	<b><u>Mid Harvests<sup>2</sup></u></b>	<b><u>Late Harvests<sup>3</sup></u></b>
ATHENA	Syngenta(Control)	32	62	6
CARIBBEAN JACKPOT	Rijk Zwaan	0	98	2
DAVINCI*	Sakata (Texas A & M)	2	93	5
INFINITE GOLD*	Sakata (Texas A & M)	4	84	12
F39	Texas A & M	21	67	12
HD 150	Texas A & M	1	86	13
HD 252	Texas A & M	0	92	8
HMX 4606	HM Clause	64	20	17
OC 164	Texas A & M	3	83	14
SFR3079	United Genetics	50	13	37
SFR3083	United Genetics	65	15	19
TH2	Texas A & M	8	69	23
TH3	Texas A & M	1	89	10
TH4	Texas A & M	5	73	22
TH5	Texas A & M	10	81	9
TH6	Texas A & M	5	87	8
USAM 14836	VoloAgri	4	93	3
USAM 16203	VoloAgri	4	88	8
<b>Average</b>		<b>15</b>	<b>72</b>	<b>13</b>

<sup>1</sup> Early harvests (1-4) : 24 June - 1 July (53 - 60 days after planting).

<sup>2</sup> Mid harvests (5-9) : 3 July - 12 July (62 - 71 days after planting).

<sup>3</sup> Late harvests (10-14) : 15 July - 26 July (74 - 85 days after planting).

Study was planted 2 May, 2019.

\* These entries are seed developed by Sakata but were submitted by Texas A&M University.

**Table 19. Orange flesh and specialty melon cultigen study. Interior fruit quality<sup>1</sup>. Clayton, NC, 2019.**

<u>Cultigen</u>	<u>Company</u>	<u>SS<sup>2</sup></u>	<u>LD<sup>3</sup></u>	<u>Flesh Firmness<sup>4</sup></u>	<u>Melon Type<sup>5</sup></u>
ATHENA	Syngenta(Control)	12.7	1.1	5.9	E
CARIBBEAN JACKPOT	Rijk Zwaan	13.0	1.2	8.2	LSL
DAVINCI*	Sakata (Texas A & M)	13.4	1.2	5.2	T
INFINITE GOLD*	Sakata (Texas A & M)	12.7	1.2	7.8	LSL
F39	Texas A & M	12.3	1.1	3.4	Western
HD 150	Texas A & M	14.2	1.2	3.8	HD
HD 252	Texas A & M	13.5	1.0	6.4	HD
HMX 4606	HM Clause	13.4	1.1	8.2	T
OC 164	Texas A & M	13.4	1.2	6.1	OC
SFR3079	United Genetics	13.5	1.2	6.3	S
SFR3083	United Genetics	13.3	1.0	5.0	S
TH2	Texas A & M	12.1	1.1	4.1	Western
TH3	Texas A & M	13.0	1.1	5.1	Western
TH4	Texas A & M	12.5	1.1	4.2	Western
TH5	Texas A & M	13.3	1.1	3.4	Western
TH6	Texas A & M	13.3	1.0	3.6	Western
USAM 14836	VoloAgri	13.7	1.1	8.5	LSL
USAM 16203	VoloAgri	13.3	1.0	6.8	HD
Average		13.1	1.1	5.7	
<b>LSD (0.05)</b>		<b>1.2</b>	<b>0.1</b>	<b>1.2</b>	

<sup>1</sup> Most measurements were obtained from fruits in harvests 2-6.

<sup>2</sup> SS = Indicates sweetness, average of 5 melons per replication (20 total).

<sup>3</sup> LD = Length and diameter ratio, average of 5 melons per replication.

<sup>4</sup> Flesh Firmness is represented in pounds.

<sup>5</sup> Type: E = Eastern Shipper, ESL = Extended Shelf Life, HD = Honeydew LSL, = Long Shelf Life, O = Orange Casaba, S = specialty, T = Tuscan, W = Western.

\* These entries are seed developed by Sakata but were submitted by Texas A&M University.