UNIVERSITY OF DELAWARE



Muskmelon Variety Trial Results 2009

Emmalea Ernest

University of Delaware Elbert N. & Ann V. Carvel Research and Education Center 16483 County Seat Highway Georgetown, DE 19947

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2009 University of Delaware Muskmelon Variety Trial

Emmalea Ernest
University of Delaware
Elbert N. & Ann V. Carvel Research and Education Center
16483 County Seat Highway
Georgetown, DE 19947
(302) 856-7303 emmalea@udel.edu

Introduction

The 2009 Muskmelon Variety Trial included 22 varieties from four participating companies. The purpose of this trial is to evaluate Muskmelon varieties for yield, quality and maturity.

Materials and Methods

Location

Field 32A at the University of Delaware Research and Education Center Farm, Georgetown, DE.

Cultural Practices

Field was fertilized according to soil test results. Beds were shaped and black plastic mulch and trickle irrigation were laid on 7' centers.

There were 22 entries in the trial this year. Plants were originally seeded in the greenhouse on April 14, 2009 and transplanted to the field on May 12, 2009. However the entire field was replanted due to <u>damage caused by a lightning strike on May 31</u>. The transplants for the replant were seeded in the greenhouse on June 9, 2009 and planted in the field on July 1, 2009. Field plots were one row (7 ft) wide and 30 ft. long. Plots were arranged in a randomized complete block design with three replications. In-row spacing was 2' or 15 plants per plot.

An application of Gramoxone 2 pt/A + Sandea 0.6 oz/A + Strategy 3 pt/A + Curbit 0.5 pt/A was made with a hooded sprayer on June 29, 2009, just before the field was replanted. Applications for disease and insect control were as follows: Bravo at 3 pt/A on 7-17, 7-25, 7-31, 8-7, 8-14, 8-22, 9-1, and 9-11; Previcur Flex at 1.2 pt/A on 8-14 and 9-1; Pristine at 18 oz/A on 7-25; Ranman at 2.75 oz/A on 7-31 and 8-22; Tanos at 8 oz/A on 8-7 and 9-11; Asana at 9.6 oz/A on 8-14; Oberon 8 oz/A on 9-11.

Harvest

Melons were harvested on ten dates: 8-17, 8-21, 8-24, 8-27, 9-1, 9-4, 9-8, 9-11, 9-14 and 9-18. The weight of each melon harvested was recorded individually. Five melons from each plot were cut and evaluated for soluble solids levels and the diameter and flesh thickness of the cut melon was measured. Soluble solids were measured using a hand-held refractometer and diameter and flesh thickness were measured with a metric ruler.

Results

Yields of each variety in lbs/A are reported in Table 1 and yields in melons/A are reported in Table 2. Yields were on the low side of average for most of the varieties in the trial, probably largely because of the (unintended) late transplant date. There were significant differences in yields among the varieties as measured in both lbs/A and melons/A. High yielding varieties in

terms of both lbs/A and melons/A included 'Orange Sherbet', 'Halona', 'Minerva', 'Atlantis', and 'Strike'. The lowest yielding varieties in the trial were Riviera Sweet and Caribbean Gold. The yields of Riviera Sweet were substantially reduced because this variety was extremely prone to cracking. Caribbean Gold is a very late producing variety and its yields may have been more acceptable if planted earlier.

Table 3 lists the varieties according to average melon weight and gives the percentage of melons in each of seven weight classes: < 2 lbs, 2-4 lbs, 4-6 lbs, 6-8 lbs, 8-10 lbs, 10-12 lbs and >12 lbs. Chart 1 is a graphical representation of Table 3 and is useful for comparing varieties in terms of fruit weight variability. For example, 1136 had an average fruit weight of 9.0 lbs, but the largest number of melons of this variety was in the 6-8 lb class and 14% were over 12 lbs. Other varieties were much less variable in size. For example, Dacona had and average fruit weight of 4.9 and 64% of the melons it produced were in the 4-6 lb class.

Table 4 reports the percent of total melons harvested on each of ten harvest dates. Goddess was the earliest variety and was harvested beginning 47 days after transplanting (DAT). Other early varieties include Halona, Home Run, Riviera Sweet, and Athena. Most of the varieties had their peak harvests at 62 DAT. Jaipur, Diva, 1032 and Orange Sherbet began ripening melons later than the other varieties but still had peak harvests around 62 to 65 DAT. Caribbean Gold was much later than the other varieties and did not begin producing until 72 DAT.

Table 5 lists the varieties according to their soluble solid measurements. Soluble solids averages are based on a 15-melon sample (5 melons per replication). There were significant differences in soluble solids among the varieties. U.S. Fancy Grade muskmelons must have soluble solids measurement of 11% or higher and U.S. No. 1 Grade muskmelons must have soluble solids measurement of 9% or higher. The vast majority of the varieties in the trial had soluble solids measurements over 9%. However, only a few varieties consistently had soluble solids of 11% or above. Soluble solids were quite variable for some of the varieties and were probably negatively affected overall by the cool, cloudy and wet weather at the end of August and beginning of September.

Varieties are listed by melon diameter in Table 6 and by flesh thickness in Table 7. Varieties are listed according to seed cavity size as a % of diameter in Table 8.

Photographs of the varieties included in the trial are in Appendix A.

Acknowledgements

The author gratefully acknowledges the assistance of:

Summer student workers, Chelsea Aydelotte and Brooke Drury, as well as Christopher Albury and Audrey Moore who helped to plant, maintain and/or harvest the plots. Brian Hearn and the REC Farm Crew for help with field operations.

These trials were partially funded by a Specialty Crops Block Grant administered by the Delaware Department of Agriculture.

Table 1. 2009 Muskmelon Variety Trial: Varieties by Yield in Lbs/A $\,$

Yield (l	bs/A)	Average Melon Weight (lbs)	Submitting Company
37489	a	7.8	check
35290	ab	7.1	Seedway
32432	abc	6.8	Siegers
30588	abc	9.0	Siegers
30500	abc	4.9	check
30300	abc	7.6	Siegers
29826	abcd	6.2	Siegers
29454	abcd	5.9	Seedway
28865	abcd	6.2	Syngenta
28369	abcd	6.6	Harris Moran
27970	abcd	7.0	Harris Moran
27627	abcd	6.2	Syngenta
27343	bcd	6.7	check
26181	bcde	7.9	Syngenta
26132	bcde	5.8	check
24797	cde	4.9	Siegers
23558	cdef	5.9	Siegers
23300	cdef	5.4	Siegers
20051	def	5.1	check
16538	efg	4.7	check
14465	fg	5.3	Siegers
9422	g	2.8	Harris Moran
0.0002			
9986.7			
	37489 35290 32432 30588 30500 30300 29826 29454 28865 28369 27970 27627 27343 26181 26132 24797 23558 23300 20051 16538 14465 9422 0.0002	35290 ab 32432 abc 30588 abc 30500 abc 30300 abc 29826 abcd 298454 abcd 28865 abcd 28369 abcd 27970 abcd 27627 abcd 27343 bcd 26181 bcde 26132 bcde 24797 cde 23558 cdef 23300 cdef 20051 def 16538 efg 14465 fg 9422 g 0.0002	Yield (lbs/A) Melon Weight (lbs) 37489 a 7.8 35290 ab 7.1 32432 abc 6.8 30588 abc 9.0 30500 abc 4.9 30300 abc 7.6 29826 abcd 6.2 29454 abcd 5.9 28865 abcd 6.2 28369 abcd 6.6 27970 abcd 7.0 27627 abcd 6.2 27343 bcd 6.7 26181 bcde 7.9 26132 bcde 5.8 24797 cde 4.9 23558 cdef 5.9 23300 cdef 5.4 20051 def 5.1 16538 efg 4.7 14465 fg 5.3 9422 g 2.8 0.0002

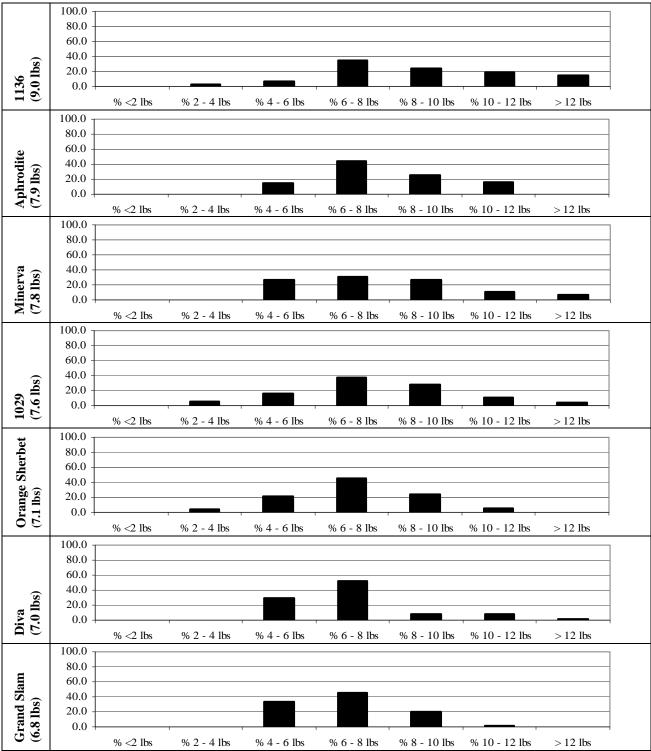
Table 2. 2009 Muskmelon Variety Trial: Varieties by Yield in Melons/A

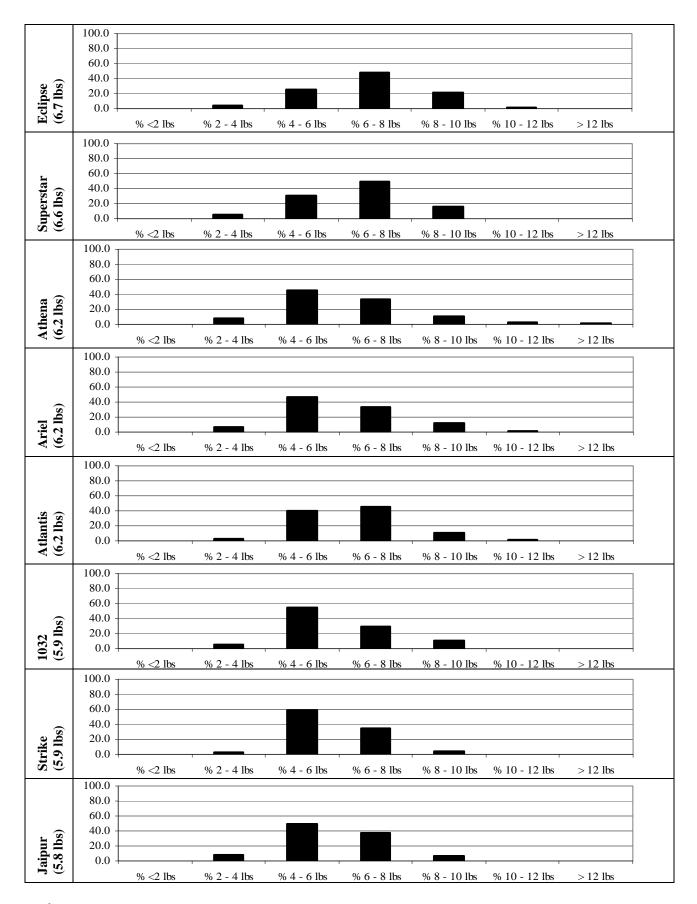
Variety	Yiel (melon		Average Melon Weight (lbs)	Submitting Company
Halona	6154	a	4.9	check
Dacona	4978	ab	4.9	Siegers
Strike	4978	ab	5.9	Seedway
Orange Sherbet	4909	ab	7.1	Seedway
Grand Slam	4771	abc	6.8	Siegers
Atlantis	4771	abc	6.2	Siegers
Minerva	4771	abc	7.8	check
Athena	4633	bcd	6.2	Syngenta
Jaipur	4494	bcde	5.8	check
Ariel	4425	bcde	6.2	Syngenta
Superstar	4356	bcde	6.6	Harris Moran
Home Run	4287	bcde	5.4	Siegers
Diva	4011	bcdef	7.0	Harris Moran
Eclipse	4011	bcdef	6.7	check
1032	3941	bcdef	5.9	Siegers
1029	3941	bcdef	7.6	Siegers
Primo	3941	bcdef	5.1	check
Goddess	3457	cdef	4.7	check
1136	3388	cdef	9.0	Siegers
Aphrodite	3319	def	7.9	Syngenta
Riviera Sweet	3181	ef	2.8	Harris Moran
Caribbean Gold	2697	f	5.3	Siegers
p-value	0.0057			
LSD	1386.5			

Table 3. 2009 Muskmelon Variety Trial: Varieties by Average Melon Weight

	Mean	Percent of Melons in Each Size Class						
Variety	Weight (lbs)	< 2.00 lbs	2.00-4.00 lbs	4.01-6.00 lbs	6.01-8.00 lbs	8.01-10.00 lbs	10.01- 12.00 lbs	>12.00 lbs
1136	9.0	0.0	2.0	6.1	34.7	24.5	18.4	14.3
Aphrodite	7.9	0.0	0.0	14.6	43.8	25.0	16.7	0.0
Minerva	7.8	0.0	0.0	26.1	30.4	26.1	10.1	7.2
1029	7.6	0.0	5.3	15.8	36.8	28.1	10.5	3.5
Orange Sherbet	7.1	0.0	4.2	21.1	45.1	23.9	5.6	0.0
Diva	7.0	0.0	0.0	29.3	51.7	8.6	8.6	1.7
Grand Slam	6.8	0.0	0.0	33.3	44.9	20.3	1.4	0.0
Eclipse	6.7	0.0	3.4	25.9	48.3	20.7	1.7	0.0
Superstar	6.6	0.0	4.8	30.2	49.2	15.9	0.0	0.0
Athena	6.2	0.0	7.5	44.8	32.8	10.4	3.0	1.5
Ariel	6.2	0.0	6.3	46.9	32.8	12.5	1.6	0.0
Atlantis	6.2	0.0	2.9	40.6	44.9	10.1	1.4	0.0
1032	5.9	0.0	5.3	54.4	29.8	10.5	0.0	0.0
Strike	5.9	0.0	2.8	58.3	34.7	4.2	0.0	0.0
Jaipur	5.8	0.0	7.7	49.2	36.9	6.2	0.0	0.0
Home Run	5.4	0.0	12.9	59.7	24.2	3.2	0.0	0.0
Caribbean Gold	5.3	0.0	5.1	71.8	23.1	0.0	0.0	0.0
Primo	5.1	0.0	21.1	54.4	21.1	3.5	0.0	0.0
Dacona	4.9	0.0	16.7	63.9	19.4	0.0	0.0	0.0
Halona	4.9	0.0	29.2	48.3	18.0	4.5	0.0	0.0
Goddess	4.7	2.0	38.0	40.0	12.0	4.0	2.0	2.0
Riviera Sweet	2.8	2.2	93.5	4.3	0.0	0.0	0.0	0.0

Chart 1. 2009 Muskmelon Variety Trial: Varieties by Average Melon Weight (lbs) and Size Class Distribution





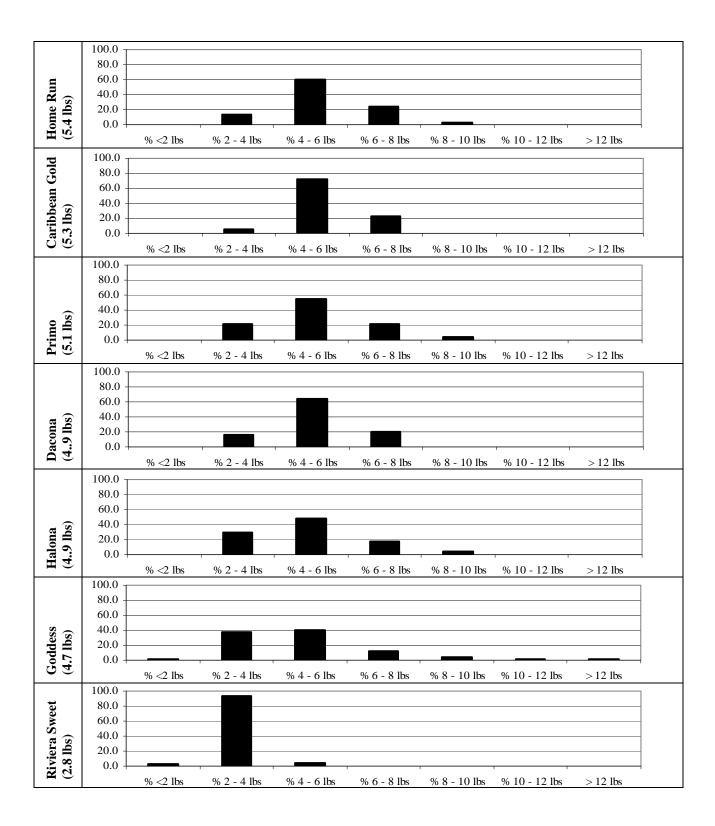


Table 4. 2009 Muskmelon Variety Trial: Percent of Total Melons Harvested on Each Harvest Date

	Percent of Total Melons Harvested on Each Harvest Date									
Variety	17-Aug	21-Aug	24-Aug	27-Aug	1-Sep	4-Sep	8-Sep	11-Sep	14-Sep	18-Sep
	47*	51	54	57	62	65	69	72	75	79
Goddess	62.0	16.0	12.0	4.0			6.0			
Halona	16.9	10.1	22.5	10.1	18.0	7.9	4.5	9.0	1.1	
Home Run		22.6	14.5	22.6	21.0	11.3	1.6	3.2	3.2	
Riviera Sweet		21.7	2.2	6.5	10.9	17.4	8.7	10.9	21.7	
Athena		13.4	13.4	10.4	37.3	16.4	3.0	3.0		3.0
Strike		8.3	11.1	11.1	40.3	18.1	8.3	2.8		
1029		5.3	12.3	15.8	36.8	24.6	5.3			
1136		4.1	10.2	2.0	28.6	30.6	14.3	6.1	4.1	
Primo		1.8	19.3	10.5	56.1	8.8			3.5	
Superstar		1.6	11.1	44.4	38.1	4.8				
Ariel		1.6	9.4	6.3	53.1	25.0	4.7			
Aphrodite			14.6	12.5	31.3	29.2	10.4	2.1		
Grand Slam			11.6	13.0	49.3	21.7	4.3			
Minerva			11.6	5.8	10.1	23.2	34.8	8.7	5.8	
Dacona			5.6	4.2	18.0	23.6	30.6	5.6	12.5	
Eclipse			1.7	17.2	36.2	22.4	15.5	5.2	1.7	
Atlantis			1.4	8.7	43.5	33.3	8.7	1.4	2.9	
Jaipur				6.2	18.5	33.8	18.5	4.6	18.5	
Diva				1.7	13.8	29.3	36.2	13.8	5.2	
1032					38.6	40.4	15.8	5.3		
Orange Sherbet					35.2	47.9	14.1	2.8		
Caribbean Gold								28.2	48.7	23.1

^{*}Days After Transplanting

Table 5. 2009 Muskmelon Variety Trial: Varieties by Soluble Solid Content

Variety	% Solub	le Solids
Riviera Sweet	14.4	
Caribbean Gold	13.3	b
Goddess	11.3	С
Minerva	11.2	cd
1032	10.7	cde
Grand Slam	10.6	cdef
Athena	10.6	cdef
Orange Sherbet	10.6	cdef
Aphrodite	10.5	cdefg
Primo	10.4	cdefg
Jaipur	10.4	cdefg
Dacona	10.3	defg
Halona	10.1	efgh
Eclipse	10.1	efghi
Atlantis	9.8	efghi
Home Run	9.7	fghi
1136	9.7	fghi
Strike	9.6	ghi
Ariel	9.2	
Diva	9.1	i
1029	8.0	j
Superstar	7.4	j
p-value	< 0.0001	
LSD	0.99	

Table 6. 2009 Muskmelon Variety Trial: Varieties by Melon Diameter in Centimeters

Variety	Melon Diameter
Variety	(cm)
1136	18.8 a
Aphrodite	18.5 ab
Minerva	18.3 abc
Eclipse	17.5 bcd
Superstar	17.3 cd
Orange Sherbet	17.3 de
Grand Slam	17.0 de
Ariel	17.0 de
Diva	16.9 de
1029	16.6 def
1032	16.6 def
Atlantis	16.3 efg
Jaipur	15.8 fgh
Caribbean Gold	15.4 ghi
Dacona	15.3 ghi
Primo	15.2 hi
Athena	15.1 hij
Halona	14.8 hij
Home Run	14.5 ijk
Strike	14.2 jk
Goddess	13.6 k
Riviera Sweet	12.0 1
p-value	< 0.0001
LSD	1.0179

Table 7. 2009 Muskmelon Variety
Trial: Varieties by Flesh Thickness
in Centimeters

Variate	Flesh Thickness				
Variety	(0	em)			
Grand Slam	5.1	a			
1136	5.0	ab			
1032	4.9	abc			
Eclipse	4.9	abc			
Aphrodite	4.8	abcd			
Orange Sherbet	4.8	abcd			
Atlantis	4.7	abcde			
Superstar	4.7	abcde			
Ariel	4.6	bcde			
Caribbean Gold	4.6	bcde			
Jaipur	4.5	cde			
Primo	4.5	cde			
Diva	4.5	cde			
Minerva	4.5	cde			
1029	4.5	cde			
Dacona	4.4	def			
Halona	4.3	efg			
Strike	3.9	fgh			
Home Run	3.9				
Athena	3.9				
Goddess	3.7				
Riviera Sweet	3.2	i			
p-value	< 0.0001				
LSD	0.4834				

Table 8. 2009 Muskmelon Variety Trial: Varieties by Cavity Size as a Percent of Diameter

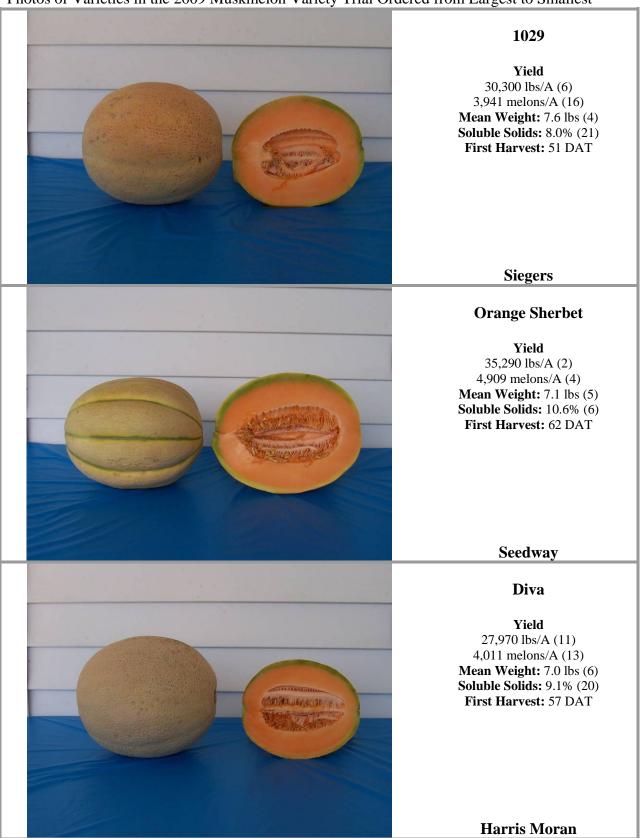
Variety	Cavity Size as a %			
variety	of Di	ameter		
Minerva	51	a		
Athena	49	ab		
Aphrodite	48	ab		
Riviera Sweet	47	abc		
Diva	47	abcd		
Home Run	47	abcd		
1136	47	abcd		
Goddess	46	abcd		
1029	46	abcd		
Superstar	46	abcd		
Ariel	46	bcde		
Strike	45	bcdef		
Eclipse	45	bcdef		
Orange Sherbet	44	bcdefg		
Dacona	43	cdefg		
Jaipur	43	cdefg		
Halona	42	cdefg		
Atlantis	42	defg		
1032	41	efg		
Caribbean Gold	41	fg		
Primo	40	fg		
Grand Slam	40	g		
p-value	< 0.0001			
LSD	4.9396			

APPENDIX A:

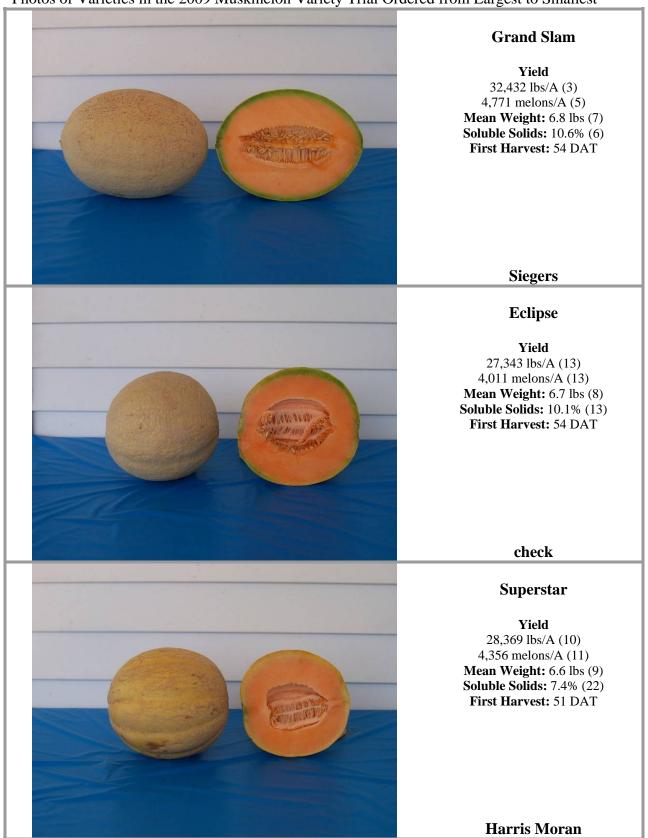
Photographs of Varieties in the 2009 Muskmelon Variety Trial



^{*}Numbers in parenthesis are the rank of the variety for this characteristic out of the 22 varieties.



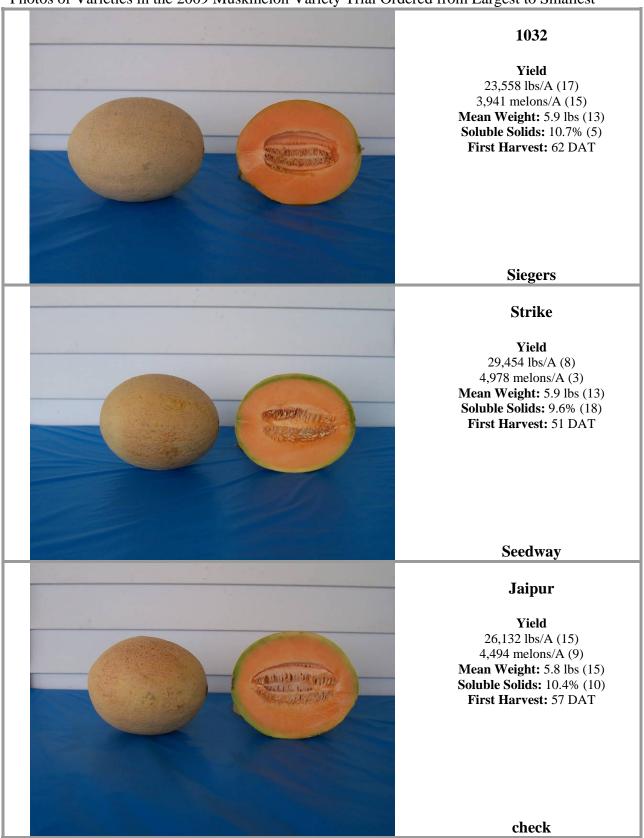
^{*}Numbers in parenthesis are the rank of the variety for this characteristic out of the 22 varieties.



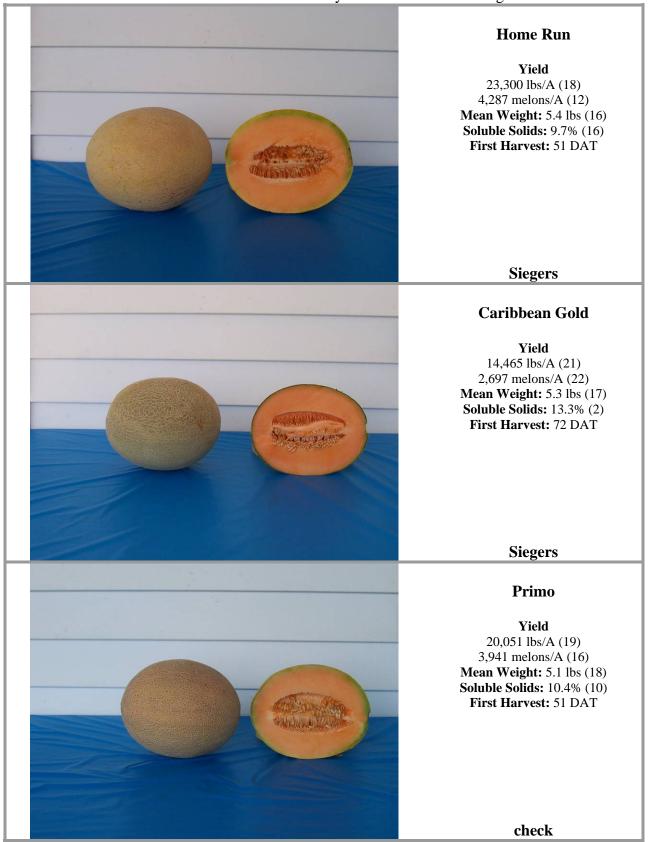
^{*}Numbers in parenthesis are the rank of the variety for this characteristic out of the 22 varieties.



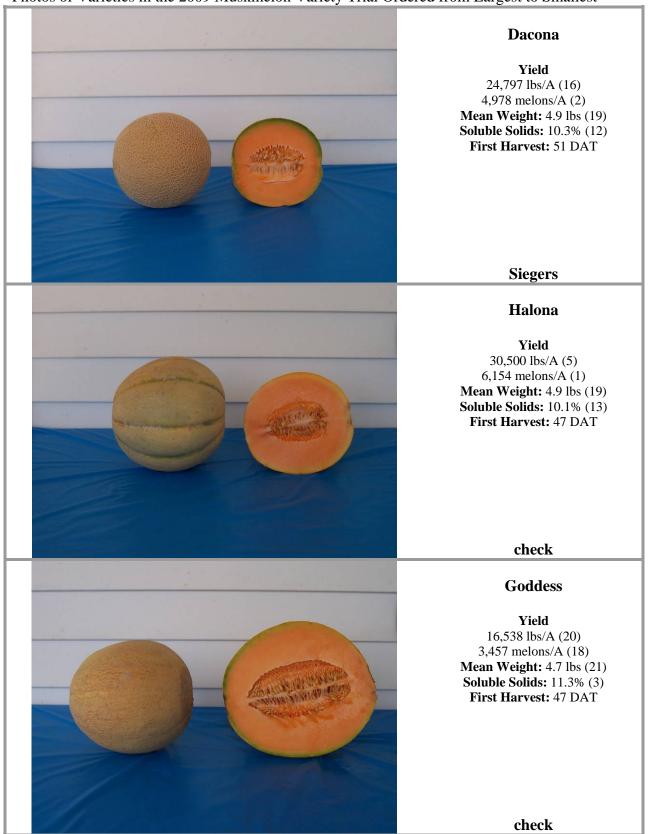
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Riviera Sweet

Yield

9,422 lbs/A (22) 3,181 melons/A (21) **Mean Weight:** 2.8 lbs (22) **Soluble Solids:** 14.4 % (1) **First Harvest:** 51 DAT

Harris Moran

APPENDIX B:

Weather Summary for the 2009 Muskmelon Variety Trial July 1st (transplanting) – September 18th (final harvest)

Appendix B: Weather Summary for the 2009 Muskmelon Variety Trial July 1st (transplanting) – September 18th (final harvest)

July 1 st (transplanting) – September 18 th (final harvest)						
DAT	Data	Max Temp	Min Temp	Rainfall		
DAT	Date	${ m ^{\circ}F}$	${}^{f o}{f F}$	(in.)		
0	1-Jul-09	86.7	66.2	0.33		
1	2-Jul-09	81.8	67.0	0.04		
2	3-Jul-09	79.0	62.4	0.12		
3	4-Jul-09	81.7	63.4	0.00		
4	5-Jul-09	75.6	64.9	0.00		
5	6-Jul-09	83.1	63.5	0.00		
6	7-Jul-09	84.5	62.7	0.00		
7	8-Jul-09	80.0	60.6	0.00		
8	9-Jul-09	75.8	57.3	0.00		
9	10-Jul-09	77.1	55.1	0.00		
10	11-Jul-09	81.0	55.9	0.00		
11	12-Jul-09	88.1	70.0	0.00		
12	13-Jul-09	83.1	65.6	0.00		
13	14-Jul-09	81.6	61.3	0.00		
14	15-Jul-09	84.3	56.7	0.00		
15	16-Jul-09	90.1	67.5	0.00		
16	17-Jul-09	87.9	72.3	0.00		
17	18-Jul-09	83.2	64.3	0.00		
18	19-Jul-09	83.8	60.6	0.00		
19	20-Jul-09	81.2	62.3	0.00		
20	21-Jul-09	82.6	69.0	0.29		
21	22-Jul-09	86.0	66.1	0.01		
22	23-Jul-09	78.4	69.2	0.21		
23	24-Jul-09	84.2	67.3	0.11		
24	25-Jul-09	88.6	65.6	0.03		
25	26-Jul-09	90.3	70.6	0.05		
26	27-Jul-09	84.3	68.8	0.47		
27	28-Jul-09	88.7	68.1	0.00		
28	29-Jul-09	88.7	73.5	0.22		
29	30-Jul-09	86.0	74.4	0.01		
30	31-Jul-09	88.1	70.6	0.50		
31	1-Aug-09	84.7	66.4	0.01		
32	2-Aug-09	85.0	69.8	0.35		
33	3-Aug-09	86.4	70.1	0.01		
34	4-Aug-09	85.7	68.3	0.00		
35	5-Aug-09	86.3	72.7	0.00		
36	6-Aug-09	74.2	65.7	0.67		
37	7-Aug-09	80.8	61.4	0.01		
38	8-Aug-09	85.6	62.0	0.00		
39	9-Aug-09	90.1	70.5	0.00		
40	10-Aug-09	91.7	69.7	0.00		
41	11-Aug-09	88.9	72.2	0.06		
42	12-Aug-09	85.3	71.9	0.04		
43	13-Aug-09	81.2	70.0	0.14		
44	14-Aug-09	82.6	65.4	0.00		
45	15-Aug-09	67.2	64.4	0.00		
46	16-Aug-09	88.9	61.2	0.00		

D.A.T.	- D (Max Temp	Min Temp	Rainfall
DAT	Date	°F	$^{\circ}\mathbf{F}$	(in.)
47	17-Aug-09	90.9	64.5	0.00
48	18-Aug-09	90.5	67.6	0.01
49	19-Aug-09	88.9	73.8	0.02
50	20-Aug-09	89.2	70.9	0.00
51	21-Aug-09	91.2	77.4	0.00
52	22-Aug-09	84.6	71.0	2.17
53	23-Aug-09	86.2	70.8	0.42
54	24-Aug-09	85.1	68.2	0.64
55	25-Aug-09	87.4	64.5	0.00
56	26-Aug-09	88.3	68.4	0.00
57	27-Aug-09	84.4	69.7	0.00
58	28-Aug-09	85.5	70.1	0.98
59	29-Aug-09	86.5	70.8	0.05
60	30-Aug-09	83.8	67.9	1.06
61	31-Aug-09	70.5	59.6	0.00
62	1-Sep-09	74.0	55.0	0.00
63	2-Sep-09	74.5	54.0	0.00
64	3-Sep-09	73.6	58.2	0.00
65	4-Sep-09	80.2	64.2	0.00
66	5-Sep-09	84.1	58.9	0.00
67	6-Sep-09	80.7	55.9	0.00
68	7-Sep-09	76.1	67.3	0.00
69	8-Sep-09	71.6	62.9	0.02
70	9-Sep-09	70.4	62.2	0.12
71	10-Sep-09	68.3	61.1	0.93
72	11-Sep-09	64.1	59.7	1.90
73	12-Sep-09	69.6	61.5	0.00
74	13-Sep-09	78.6	59.8	0.00
75	14-Sep-09	80.7	56.5	0.00
76	15-Sep-09	82.4	63.3	0.00
77	16-Sep-09	75.9	66.2	0.00
78	17-Sep-09	70.0	56.0	0.00
79	18-Sep-09	74.5	53.1	0.00