

# Seedless Watermelon Variety Trial Results 2017

Gordon Johnson & Emmalea Ernest

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

## Table of Contents

<b>Introduction.....</b>	<b>3</b>
<b>Materials and Methods.....</b>	<b>3</b>
<b>Results .....</b>	<b>4</b>
<b>Acknowlegements.....</b>	<b>6</b>
<b>Table 1. Entries in the 2017 Watermelon Variety Trial.....</b>	<b>7</b>
<b>Table 2. 2017 Seedless Watermelon Variety Trial: Varieties by Marketable I Yield (all marketable fruit over 9 lbs) in Lbs/a and Fruits/a and Fruits per Harvest .....</b>	<b>8</b>
<b>Table 3. 2017 Seedless Watermelon Variety Trial: Varieties by Marketable II Yield (excluding fruit less than 9 lbs and over 24 lbs) in Lbs/a and Fruits/a and Fruits per Harvest .....</b>	<b>9</b>
<b>Table 4. 2017 Seedless Watermelon Variety Trial: Percent of Total Harvested at Each Harvest by Weight .....</b>	<b>10</b>
<b>Table 5. 2017 Seedless Watermelon Variety Trial: Varieties by Average Fruit Weight and Percent of Fruit in Each Size Class .....</b>	<b>11</b>
<b>Table 6. 2017 Seedless Watermelon Variety Trial: Percent of Fruit in Each Size Class Including Smaller Sizes .....</b>	<b>12</b>
<b>Table 7. 2017 Seedless Watermelon Variety Trial: Varieties by Soluble Solid Content.....</b>	<b>13</b>
<b>Table 8. 2017 Seedless Watermelon Variety Trial: Hollow Heart (HH) Severity Rating (1 = no HH, 2 = minor HH, 3 moderate HH, 4 = major HH, 5 = Severe HH).....</b>	<b>14</b>
<b>Table 9. 2017 Seedless Watermelon Variety Trial: Percent of Sampled Fruit Above Standard for Mature Seeds*.....</b>	<b>15</b>
<b>APPENDIX A: Photographs of Varieties in the 2017 Seedless Watermelon Variety Trial ....</b>	<b>16</b>
<b>APPENDIX B: Weather Summary for the 2017 Watermelon Variety Trial May–August....</b>	<b>28</b>

## **2017 University of Delaware Seedless Watermelon Variety Trial**

Gordon Johnson & Emmalea Ernest

University of Delaware

Elbert N. & Ann V. Carvel Research and Education Center  
16483 County Seat Highway  
Georgetown, DE 19947  
(302) 856-7303    [gjohn@udel.edu](mailto:gjohn@udel.edu)    [emmalea@udel.edu](mailto:emmalea@udel.edu)

### **Introduction**

The 2017 Seedless Watermelon Variety Trial included 33 varieties from nine participating companies. The purpose of this trial was to evaluate seedless watermelon varieties for yield, quality and maturity.

### **Materials and Methods**

#### ***Location and Soil Type***

Field 25 B, University of Delaware Thurman Adams Research Farm, Carvel Research and Education Center, Georgetown, Delaware. The soil type was a Hammonton Loamy Sand.

#### ***Cultural Practices***

The field was fertilized and limed according to soil test results. Preplant fertilizer was 50-0-180 (N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O). Black plastic mulch and trickle irrigation were laid on 7' centers. Additional nitrogen fertilizer was applied by fertigation during fruiting in three applications three weeks apart (40, 40, 30 lbs/a N).

Trial entries are listed in Table 1. Entries were seeded in the greenhouse on April 14, 2017. Plants were transplanted to the field on May 17, 2017. Field plots were one row (7 ft) wide and 27 ft long. Plots were arranged in a randomized complete block design with four replications. In-row spacing for seedless plants was 3 ft with 9 plants per plot. Four pollinizer plants, one each of the in-row pollenizer varieties SP-6, Accomplice, Pollen Pro, and Ace Plus were planted in each plot and one between plots in the following arrangement:

s 6 s s A s s P s s A+. "6" designates Sp-6, A designates "Accomplice", P designates "Pollen Pro", A+ designates "Ace plus" and "s" designates the seedless plants. The border rows next to the drive rows, which separated the replications, were planted in the triploid variety 'Troubadour', with the same the pollenizers, in the same arrangement as the experimental plots.

Herbicides used in row middles included Sinbar 4 oz/A, Reflex 12oz/A, Dual 1.25 pt/A, Prowl 2 pt/A, Sandea 1 oz/A before planting.

A comprehensive disease, insect and mite control program was used for the trial as follows:

6/2/17 Initiate 2 pt/A, Warrior11 2 oz/A  
6/9/17 Initiate 2 pt/A, Warrior11 2 oz/A, Kocide 3000 2 lb/A  
6/16/17 Initiate 3 pt/A, Assail 4 oz/A, Kocide 3000 2 lb/A, Tactic 1 pt/A  
6/25/17 Initiate 3 pt/A, Warrior11 2 oz/A, Kocide 3000 2 lb/A, Tactic 1 pt/A  
6/25/17 Initiate 3 pt/A, Warrior11 2 oz/A, Forum 6 oz/A, Tactic 1 pt/A  
7/7/17 Initiate 3 pt/A, Inspire Super 16 oz/A  
7/14/17 Bravo 3 pt/A, Aprovia Top 13.5 oz/A, Kocide 3000 2 lb/A, Warrior11 2 oz/A, Tactic 1 pt/A  
7/21/17 Bravo 3 pt/A, Inspire Super 16 oz/A, Assail 4 oz/A, Zeal 2 oz/A, Tactic 1 pt/A  
7/28/17 Bravo 3 pt/A, Inspire Super 16 oz/A, Ranman 2.5 oz/A, Zeal 2 oz/A, Tactic 1 pt/A  
8/5/17 Bravo 3 pt/A, Aprovia Top 13.5 oz/A, Reaper 1 pt/A, Gladiator 19 oz/A, Tactic 1 pt/A  
8/14/17 Bravo 3 pt/A, Aprovia Top 13.5 oz/A, Tactic 1 pt/A  
8/18/17 Bravo 3 pt/A, Aprovia Top 14 oz/A, Tactic 1 pt/A  
8/28/17 Bravo 3 pt/A, Previcur flex 1.2 pt/A, Warrior11 2 oz/A, Tactic 1 pt/A

Irrigation was applied regularly as determined by experiment station farm staff. Temperatures during the early growth period were below average with heavy winds. Growth was slow during the first 4 weeks.

### ***Harvest***

Due to the late spring, plots were not harvested until August. Fruit were harvested three times. The first harvest was on August 2 and 3 at 77 days after transplanting (DAT), the second harvest was 95 DAT, and the final harvest was in early September at 115 DAT. The weight of each watermelon harvested was recorded individually. Five marketable watermelons from each plot were cut and evaluated for presence of hollow heart, hard seeds and soluble solids levels. Watermelons were cut lengthwise and then crosswise and the number of hard seeds visible on the surface of the four pieces were counted. Soluble solids were measured using a hand-held refractometer. Hollow heart was rated on a 1-5 scale with 1 being no hollow heart and 5 being severe hollow heart.

### **Results**

Total yield, marketable yield excluding misshapen culls and fruit less than 9 lbs (Marketable Yield I) and marketable yield excluding misshapen culls, fruit less than 9 lbs and fruit over 24 lbs (Marketable Yield II) are reported in Tables 2 and 3 in both pounds per acre and fruit per acre for each variety. Mini Bee and ORS 7033 B included smaller sizes. Yields in the trial ranged from 51,768 to 135,220 lbs/A.

The highest yielding varieties in the trial in terms of Marketable Yield I in lbs/A were: Crunchy Red, 9651, Turnpike, 9601, Bottle Rocket, Warrior, SV 0241 WA, Fascination, KB 10770, ORS 6278, Kingman and XWT 6009. This high yielding group ranged from 135,220 to 99,230 lbs per acre.

The highest yielding larger fruited varieties in the trial in terms of Marketable Yield I in fruit/A were: Crunchy Red, Turnpike, SV 0241 WA, Warrior, Kingman, ORS 6151, and 9601 ranging from 7,836 to 6396 melons per acre.

The two small fruited melons, Mini Bee and ORS 7033 B, had the highest number of fruits at 8,931 and 9,968 melons per acre respectively. This included melons from the mini size category (4 lbs or greater).

The highest yielding varieties in terms of Marketable Yield II in lbs/A were: Crunchy Red, 9651, Turnpike, 9601, SV 0241 WA, Warrior, 9601, Kingman, Fascination, and ORS 7033 B. This high yielding group II excluding very large melons ranged from 121,959 to 93,766 lbs per acre.

The highest yielding larger fruited varieties in terms of Marketable Yield II in fruit/A were: 9651, Crunchy Red, Turnpike, SV 0241 WA, ORS 6151, Warrior, Kingman, 9601, and Fascination. This high group ranged from 7,663 to 5,820 fruits per acre.

Table 4 reports the percent of total harvest for each harvest. All varieties produced more than 40% of their yield on the first harvest. The following varieties produced more than 60% of their yield on the first harvest: ORS 6253, SV 3105 WA, ORS 6278, KB 10770, WDL 2413, ORS 6260, Charismatic, ORS 6305, Road Trip Captivation, XWT 6008, ORS 6151, Fascination, Bottle Rocket, Summer Breeze, and 7197. Those varieties with extended harvest (50% or more harvested in the second and third harvest) were Secretariat, Turnpike, and 9601.

Table 5 lists the varieties according to average fruit weight and gives the percentage of fruit in each of four weight classes: 60-count (9.0-13.5 lbs), 45-count (13.6-17.5 lbs), 36-count (17.6-21.4 lbs) and 30-count (>21.5 lbs). In general, fruit weights were above average in 2017. Large fruited varieties with average weights over 18 pounds were Bottle Rocket, Maxima, SV 3105 WA, ORS 6278, ORS 6305, Joy Ride, and Road Trip. Medium fruited varieties over 16 pounds included KB 10770, Captivation, Summer Breeze, WDL 2413, Crunchy Red, 7187, ORS 6260, 9601, XWT 6009, 7197, Fascination, Wolverine, Unbridled, Turnpike, Warrior, XWT 6008, SV 0241 WA, and Charismatic.

Those varieties with more than 35% of the melons harvested in the 45-count class included XWT 6008, ORS 6260, Kingman, 7197, ORS 6253, Charismatic, SV 0241 WA, and Secretariat.

Varieties with high percentage of small fruited melons (60-count) included ORS 7033 B, Secretariat, ORS 6151, 9651 and Kingman.

Varieties with high numbers of 36-count fruit were Captivation, 9601, Road Trip, Unbridled, Charismatic, and Wolverine.

Bottle Rocket, SV 3105 WA, ORS 6305, ORS 6278, and Maxima produced over 30% in the 30-count class.

Table 6 shows smaller weight classes appropriate for the two small fruited melons. Mini Bee produced over 80% of its melons in the personal or icebox size class from 4 to 9 pounds. ORS 7033 B produced 41% of its melons in the small size class.

Table 7 lists the varieties according to their soluble solid measurements. Soluble solids averages are based on a 20-fruit sample (5 fruit per replication). There were significant differences in soluble solids among the varieties. Road Trip, 9651, Turnpike, Unbridled, ORS 6260, Kingman, 7197, Embassy and Captivation had the highest soluble solids levels. All varieties had average soluble solids of over 10% with the exception of XWT 6009 and ORS 9033 B.

Table 8 lists the varieties according to average severity of hollow heart. Hollow heart averages are based on a 20-fruit sample (5 fruit per replication). No hollow heart was observed in Mini Bee, Joy Ride, ORS 6260, ORS 6278, ORS 6305, ORS 6253 and Summer Breeze. Turnpike had high levels of hollow heart. Those additional varieties with one or more fruit with major or severe hollow heart (10% unsaleable) were SV 0241, and 9601.

Table 9 lists the varieties according to the percent of fruit with enough hard seeds to render them unmarketable. Mini Bee, ORS 6253, Charismatic, Embassy, XWT 6008, Kingman, XWT 6009, and Fascination all had significant numbers of fruit over standard for hard seed.

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

## Acknowledgements

The authors gratefully acknowledge:

Extension Vegetable Program employees Alexa Barber, Jennifer Jones, Caitlin Molnar, Carolanne Mcfarlin, Kenna Hunt, Brandon Hunt, and Danielle Vanderhei for their assistance throughout the trial, and especially during harvest.

Brian Hearn and Ward Harris for pesticide, fertilizer, and irrigation applications. Research farm staff that tilled the plots and layed and removed plastic mulch.

Harris Moran, Sakata, and Syngenta for donation of seed for border rows and pollenizers.

**Table 1. Entries in the 2017 Watermelon Variety Trial**

Variety	Entering Company
7187	Nunhems
Embassy	Nunhems
Warrior	Nunhems
7197	Nunhems
9601	Nunhems
9651	Nunhems
SV3105WA (Tailgate)	Seminis
SV0241WA	Seminis
Road Trip	Seminis
Bottle Rocket	Seminis
Summer Breeze	Seminis
Joy Ride	Seminis
XWT 6008	Sakata
XWT 6009	Sakata
Secretariat	Sakata
Kingman	Sakata
Charismatic	Sakata
Unbridled	Sakata
KB 10770	KB
Mini Bee	Siegers
Wolverine	Highmark
Turnpike	Harris Moran
Crunchy Red	Harris Moran
Fascination	Syngenta
Captivation	Syngenta
WDL 2413	Syngenta
Maxima	Origene
ORS 6151	Origene
ORS 6253	Origene
ORS 6260	Origene
ORS 6278	Origene
ORS 6305	Origene
ORS 7033B	Origene

**Table 2. 2017 Seedless Watermelon Variety Trial: Varieties by Marketable I Yield (all marketable fruit over 9 lbs<sup>1</sup>) in Lbs/a and Fruits/a and Fruits per Harvest**

Variety	Yields and Harvest Distribution					
	Marketable I lbs/a	Marketable I Fruits/a	Fruits per harvest			
			Harvest 1 78 DAT	Harvest 2 95 DAT	Harvest 3 115 DAT	
Crunchy Red	135220 a	7836 bcd	4552	1729	1556	
9651	120812 ab	7894 abc	3918	2996	980	
Turnpike	119214 abc	7145 bcde	2996	3688	461	
9601	113123 abc	6396 cdefghij	2650	2996	749	
Bottle Rocket	110196 abcd	5359 efghijkl	3227	1729	403	
Warrior	109023 abcd	6569 cdefg	3457	2362	749	
SV 0241 WA	108180 abcd	6684 bcdef	3630	2766	288	
Fascination	105398 abcde	6223 defghijk	3630	2017	576	
KB 10770	104183 abcde	5820 defghijk	3918	1844	58	
ORS 6278	101864 abcdef	5301 efghijkl	3572	749	980	
Kingman	101567 abcdef	6511 cdefgh	3284	2420	807	
XWT 6009	99230 abcdefg	5762 defghijk	2708	2823	230	
XWT 6008	97641 bcdefg	5992 defghijk	3572	2247	173	
Maxima	97588 bcdefg	4898 fghijkl	2708	1613	576	
7197	95665 bcdefg	5647 efghijk	3169	1959	519	
ORS 6151	95604 bcdefg	6511 cdefghi	3860	2132	519	
7187	94850 bcdefg	5474 efghijkl	2766	2362	346	
ORS 7033 B	93766 bcdefg	9968 a	5474	3515	980	
Unbridled	91669 bcdefg	5416 efghijkl	2535	2478	403	
Captivation	89356 bcdefg	5070 fghijkl	3169	1210	691	
Wolverine	88918 cdefg	5243 efghijkl	2823	1671	749	
Joy Ride	87353 cdefg	4610 ijk	2593	1556	461	
ORS 6260	87311 cdefg	4955 fghijkl	3400	1152	403	
Road Trip	86683 cdefg	4725 hijkl	2823	1210	691	
ORS 6305	84685 cdefg	4321 kl	2650	1268	403	
ORS 6253	83832 cdefg	5186 efghijkl	4091	749	346	
Summer Breeze	80773 defg	4610 ijk	2650	1613	346	
WDL 2413	80323 defg	4610 jkl	2939	1210	461	
Charismatic	79106 defg	4725 ghijkl	3169	1325	230	
Secretariat	78053 defg	5301 efghijkl	2593	2190	519	
Embassy	73028 efg	4494 jkl	2305	1671	519	
SV 3105 WA	69777 fg	3515 1	2593	864	58	
Mini Bee	66605 g	8931 ab	4667	3515	691	

<sup>1</sup>Mini Bee and ORS 7033B includes smaller sizes

<i>p</i> -value	0.05	<0.001				
LSD <sub>0.05</sub>	34390	1962				

**Table 3. 2017 Seedless Watermelon Variety Trial: Varieties by Marketable II Yield (excluding fruit less than 9 lbs and over 24 lbs<sup>1</sup>) in Lbs/a and Fruits/a and Fruits per Harvest**

Variety	Yields and Harvest Distribution						
					Fruits per harvest		
	Marketable II lbs/a		Marketable II Fruits/a		Harvest 1 78 DAT	Harvest 2 95 DAT	Harvest 3 115 DAT
Crunchy Red	121959	a	7318	bcd	4264	1498	1556
9651	114889	ab	7663	bc	3688	2996	980
Turnpike	110372	abc	6799	cde	2881	3457	461
SV 0241 WA	102247	abcd	6453	cdef	3457	2708	288
Warrior	101410	abcd	6280	cdef	3284	2247	749
9601	101122	abcde	6050	cdefg	2593	2708	749
Kingman	95262	abcdef	6280	cdef	3169	2305	807
Fascination	95020	abcdefg	5820	cdefgh	3457	1786	576
ORS 7033 B	93766	abcdefg	9968	a	5474	3515	980
KB 10770	92110	bcdefg	5359	efghij	3515	1786	58
XWT 6008	91813	bcdefg	5762	defghi	3457	2132	173
ORS 6151	90850	bcdefg	6338	cdef	3745	2074	519
XWT 6009	90308	bcdefg	5416	efghij	2535	2650	230
7197	89906	bcdefg	5416	efghij	2996	1901	519
7187	88418	bcdefg	5243	efghij	2650	2247	346
Unbridled	85994	bcdefg	5186	efghij	2305	2478	403
Captivation	84995	cdefgh	4898	fghijk	3054	1152	691
Wolverine	84220	cdefgh	5070	efghijk	2766	1556	749
ORS 6253	78858	defghi	4955	efghijk	3918	691	346
Charismatic	76168	defghi	4610	fghijkl	3111	1268	230
Secretariat	75201	defghi	5186	efghij	2535	2132	519
Road Trip	71539	efghi	4149	hijkl	2362	1095	691
Embassy	70045	fghi	4379	ghijkl	2190	1671	519
Maxima	69804	fghi	3918	ijkl	2420	922	576
Joy Ride	69242	fghi	3976	hijkl	2132	1383	461
WDL 2413	67868	fghi	4149	hijkl	2535	1152	461
Bottle Rocket	67201	fghi	3803	jkl	2362	1037	403
Mini Bee	66605	fghi	8931	ab	4725	3515	691
ORS 6260	66572	fghi	4264	ghijkl	2996	864	403
Summer Breeze	65893	fghi	4033	hijkl	2247	1440	346
ORS 6278	65467	ghi	3976	hijkl	2362	691	922
ORS 6305	56157	hi	3284	kl	1901	980	403
SV 3105 WA	51768	i	2823	l	1959	807	58

<sup>1</sup>Mini Bee and ORS 7033B includes smaller sizes

<i>p</i> -value	0.0002	0.0001			
LSD <sub>0.05</sub>	29641	1877			

**Table 4. 2017 Seedless Watermelon Variety Trial: Percent of Total Harvested at Each Harvest by Weight**

Variety	Percent of Total Harvested at Each Harvest by Weight		
	Harvest 1 77 DAT	Harvest 2 95 DAT	Harvest 3 115 DAT
ORS 6253	83	12	5
SV 3105 WA	77	22	1
ORS 6278	74	12	15
KB 10770	73	26	1
WDL 2413	72	21	7
ORS 6260	71	23	6
Charismatic	70	26	4
ORS 6305	66	28	6
Road Trip	65	23	12
Captivation	65	23	12
XWT 6008	63	34	2
ORS 6151	63	30	8
Fascination	61	32	7
Bottle Rocket	61	34	5
Summer Breeze	61	34	5
7197	61	32	8
Crunchy Red	60	23	16
Joy Ride	60	32	9
Embassy	58	34	8
SV 0241 WA	58	38	4
Wolverine	57	33	10
Warrior	57	33	10
Maxima	56	35	9
Kingman	56	34	10
9651	55	34	11
ORS 7033 B	55	36	10
7187	54	40	6
Mini Bee	53	41	6
Unbridled	53	42	5
XWT 6009	51	46	3
Secretariat	50	41	9
Turnpike	47	48	5
9601	44	47	9

**Table 5. 2017 Seedless Watermelon Variety Trial: Varieties by Average Fruit Weight and Percent of Fruit in Each Size Class**

Variety	Mean Marketable I Weight (lbs)	Percent of Fruit in Each Size Class				
		30 Count 21.5 lbs plus	36 Count 17.6-21.4 lbs	45 Count 13.6- 17.5 lbs	60 Count 9.0- 13.5 lbs	
Bottle Rocket	20.6	a	46.2	18.3	24.7	10.8
Maxima	19.9	ab	36.5	29.4	18.8	15.3
SV 3105 WA	19.7	abc	43.5	24.2	21.0	9.7
ORS 6278	19.1	bc	36.6	20.4	21.5	20.4
ORS 6305	19.0	bcd	38.0	22.8	16.5	17.7
Joy Ride	19.0	bcd	28.8	30.0	26.3	15.0
Road Trip	18.2	cde	22.9	36.1	20.5	19.3
KB 10770	17.7	def	22.3	28.2	29.1	18.4
Captivation	17.6	def	15.9	38.6	28.4	17.0
Summer Breeze	17.4	efgh	21.0	27.2	27.2	23.5
WDL 2413	17.3	efgh	23.5	23.5	30.9	21.0
Crunchy Red	17.3	efg	16.9	28.7	33.8	19.9
7187	17.2	efgh	21.9	29.2	21.9	25.0
ORS 6260	17.2	efgh	18.9	16.7	41.1	18.9
9601	17.1	efgh	15.3	37.3	19.5	21.2
XWT 6009	17.0	efghi	20.4	22.3	32.0	22.3
7197	16.8	fghi	14.1	25.3	38.4	21.2
Fascination	16.8	fghi	19.1	24.5	30.0	24.5
Wolverine	16.7	fghij	12.9	31.2	31.2	22.6
Unbridled	16.7	fghij	14.6	34.4	29.2	19.8
Turnpike	16.6	fghij	15.9	25.4	28.6	28.6
Warrior	16.5	fghij	13.0	27.0	34.8	24.3
XWT 6008	16.2	ghij	7.6	25.7	44.8	21.0
SV 0241 WA	16.1	hij	9.4	27.4	35.9	26.5
Charismatic	16.1	ghij	4.5	34.1	37.5	17.0
Embassy	16.0	ghijk	10.0	30.0	32.5	25.0
ORS 6253	15.8	ijkl	12.8	17.0	38.3	26.6
Kingman	15.5	jkl	8.8	19.3	38.6	32.5
9651	14.9	klm	6.2	24.1	28.3	35.2
Secretariat	14.6	lm	4.3	19.1	35.1	39.4
ORS 6151	14.2	m	5.0	16.5	33.1	37.2
ORS 7033 B	9.4	n	0.0	0.6	4.0	54.3
Mini Bee	7.5	o	0.0	0.0	0.0	18.8
<b>p-value</b>	<b>&lt;0.0001</b>					
<b>LSD 0.05</b>	<b>1.2</b>					

**Table 6. 2017 Seedless Watermelon Variety Trial: Percent of Fruit in Each Size Class Including Smaller Sizes**

Variety	Mean Marketable I Weight (lbs)	No/A of Fruit in Each Size Class					
		30 Count 21.5 lbs plus	36 Count 17.6- 21.4 lbs	45 Count 13.6- 17.5 lbs	60 Count 9.0-13.5 lbs	7-9 lbs	4-7 lbs
Mini Bee	7.5	0.0	0.0	0.0	18.8	40.3	40.9
ORS 7033 B	9.4	0.0	0.6	4.0	54.3	28.9	12.1
ORS 6151	14.2	5.0	16.5	33.1	37.2	6.6	1.7
Secretariat	14.6	4.3	19.1	35.1	39.4	2.1	0.0
9651	14.9	6.2	24.1	28.3	35.2	4.1	2.1
Kingman	15.5	8.8	19.3	38.6	32.5	0.9	0.0
ORS 6253	15.8	12.8	17.0	38.3	26.6	4.3	1.1
Embassy	16.0	10.0	30.0	32.5	25.0	1.3	1.3
Charismatic	16.1	4.5	34.1	37.5	17.0	3.4	3.4
SV 0241 WA	16.1	9.4	27.4	35.9	26.5	0.9	0.0
XWT 6008	16.2	7.6	25.7	44.8	21.0	1.0	0.0
Warrior	16.5	13.0	27.0	34.8	24.3	0.9	0.0
Turnpike	16.6	15.9	25.4	28.6	28.6	1.6	0.0
Unbridled	16.7	14.6	34.4	29.2	19.8	1.0	1.0
Wolverine	16.7	12.9	31.2	31.2	22.6	1.1	1.1
Fascination	16.8	19.1	24.5	30.0	24.5	1.8	0.0
7197	16.8	14.1	25.3	38.4	21.2	1.0	0.0
XWT 6009	17.0	20.4	22.3	32.0	22.3	2.9	0.0
9601	17.1	15.3	37.3	19.5	21.2	5.9	0.8
ORS 6260	17.2	18.9	16.7	41.1	18.9	2.2	2.2
7187	17.2	21.9	29.2	21.9	25.0	2.1	0.0
Crunchy Red	17.3	16.9	28.7	33.8	19.9	0.7	0.0
WDL 2413	17.3	23.5	23.5	30.9	21.0	0.0	1.2
Summer Breeze	17.4	21.0	27.2	27.2	23.5	1.2	0.0
Captivation	17.6	15.9	38.6	28.4	17.0	0.0	0.0
KB 10770	17.7	22.3	28.2	29.1	18.4	1.9	0.0
Road Trip	18.2	22.9	36.1	20.5	19.3	1.2	0.0
Joy Ride	19.0	28.8	30.0	26.3	15.0	0.0	0.0
ORS 6305	19.0	38.0	22.8	16.5	17.7	3.8	1.3
ORS 6278	19.1	36.6	20.4	21.5	20.4	1.1	0.0
SV 3105 WA	19.7	43.5	24.2	21.0	9.7	1.6	0.0
Maxima	19.9	36.5	29.4	18.8	15.3	0.0	0.0
Bottle Rocket	20.6	46.2	18.3	24.7	10.8	0.0	0.0
<i>p</i> -value	<b>&lt;0.0001</b>						
<i>LSD 0.05</i>	<b>1.21</b>						

**Table 7. 2017 Seedless Watermelon Variety Trial: Varieties by Soluble Solid Content**

Variety	% Soluble Solids	
Road Trip	11.65	a
9651	11.63	abc
Turnpike	11.61	ab
Unbridled	11.31	abcd
ORS 6260	11.23	abcde
Kingman	11.13	abcdef
7197	11.07	abcdefg
Embassy	11.04	abcdefghijklm
Captivation	11.03	abcdefghijklm
Mini Bee	10.99	abcdefghijklm
9601	10.95	abcdefghijklm
Joy Ride	10.93	abcdefghijklm
Summer Breeze	10.91	abcdefghijklm
SV 3105 WA	10.91	abcdefghijklm
Bottle Rocket	10.87	abcdefghijklm
SV 0241 WA	10.85	defghij
Maxima	10.84	defghij
Secretariat	10.81	defghijk
Crunchy Red	10.80	defghijk
ORS 6305	10.71	defghijk
ORS 6253	10.69	defghijk
7187	10.53	efghijk
Wolverine	10.46	fghijk
Warrior	10.45	fghijk
KB 10770	10.44	fghijk
WDL 2413	10.42	ghijk
Fascination	10.38	hijkl
ORS 6278	10.35	hijkl
Charismatic	10.32	ijkl
ORS 6151	10.17	jklm
XWT 6008	10.10	klm
XWT 6009	9.71	lm
ORS 7033 B	9.56	m
<i>p-value</i>	<0.0001	
<i>LSD 0.05</i>	0.69	

**Table 8. 2017 Seedless Watermelon Variety Trial: Hollow Heart (HH) Severity Rating (1 = no HH, 2 = minor HH, 3 moderate HH, 4 = major HH, 5 = Severe HH)**

Variety	Hollow Heart Severity Rating (mean)		Percent Hollow Heart By Severity Rating			
			2	3	4	5
Turnpike	2.20	a	40	25	10	0.0
Kingman	1.75	b	25	25	0	0.0
SV 0241 WA	1.70	bc	20	10	10	0.0
Warrior	1.50	bcd	30	10	0	0.0
XWT 6009	1.45	bcde	0	15	5	0.0
9601	1.40	bcd <sup>f</sup>	0	5	10	0.0
Secretariat	1.40	bcd <sup>f</sup> g	13	13	0	0.0
WDL 2413	1.40	bcd <sup>f</sup>	25	0	5	0.0
Wolverine	1.40	bcd <sup>f</sup>	20	10	0	0.0
Charismatic	1.35	cdefgh	5	15	0	0.0
Unbridled	1.35	cdefgh	10	5	5	0.0
Embassy	1.30	defgh	20	5	0	0.0
Bottle Rocket	1.27	defgh	13	7	0	0.0
Crunchy Red	1.27	defgh	0	13	0	0.0
ORS 6151	1.25	defgh	15	5	0	0.0
Captivation	1.20	defgh	0	10	0	0.0
ORS 7033 B	1.20	defgh	10	5	0	0.0
7197	1.15	defgh	15	0	0	0.0
Road Trip	1.15	defgh	15	0	0	0.0
9651	1.13	defgh	13	0	0	0.0
Fascination	1.10	efgh	0	5	0	0.0
XWT 6008	1.10	efgh	0	5	0	0.0
7187	1.07	efgh	7	0	0	0.0
SV 3105 WA	1.05	fgh	5	0	0	0.0
Maxima	1.05	fgh	5	0	0	0.0
KB 10770	1.05	fgh	5	0	0	0.0
Mini Bee	1.00	gh	0	0	0	0.0
Joy Ride	1.00	gh	0	0	0	0.0
ORS 6260	1.00	h	0	0	0	0.0
ORS 6278	1.00	h	0	0	0	0.0
ORS 6305	1.00	h	0	0	0	0.0
ORS 6253	1.00	h	0	0	0	0.0
Summer Breeze	1.00	h	0	0	0	0.0
<b>p-value</b>	<b>0.0001</b>					
<b>LSD 0.05</b>	<b>0.26</b>					

**Table 9. 2017 Seedless Watermelon Variety Trial: Percent of Sampled Fruit Above Standard for Mature Seeds\***

Variety	% Above Standard for Mature Seeds
7197	5
Maxima	5
SV 3105 WA	5
Warrior	5
WDL 2413	5
Wolverine	5
9601	10
9651	10
Secretariat	10
Summer Breeze	10
Mini Bee	15
ORS 6253	20
Charismatic	25
Embassy	35
XWT 6008	45
Kingman	50
XWT 6009	55
Fascination	60

\* the USDA standard for seedless watermelons: “Watermelons of a size greater than ten (10) pounds may have 4 or fewer mature seeds, not to include pips/caplets, on the face of the melon which has been cut into four equal sections (one lengthwise cut and one crosswise cut)”

## **APPENDIX A:**

**Photographs of Varieties in the 2017 Seedless Watermelon Variety Trial**

## Varieties from the 2017 Seedless Watermelon Trial



### **Crunchy Red (Standard Check)**

Marketable I Yield: 135,220 lbs/A (1)  
Marketable II Yield: 121,959 lbs/A (1)  
Fruits Per Acre: 7,836  
Mean Weight: 17.3 lbs  
Count 60-45-36-30 %: 20-34-29-17  
Soluble Solids: 10.8 %



### **Harris Moran**

### **9651**

Marketable I Yield: 120,812 lbs/A (2)  
Marketable II Yield: 114,889 lbs/A (2)  
Fruits Per Acre: 7,836  
Mean Weight: 14.9 lbs  
Count 60-45-36-30 %: 35-28-24-6  
Soluble Solids: 11.6 %



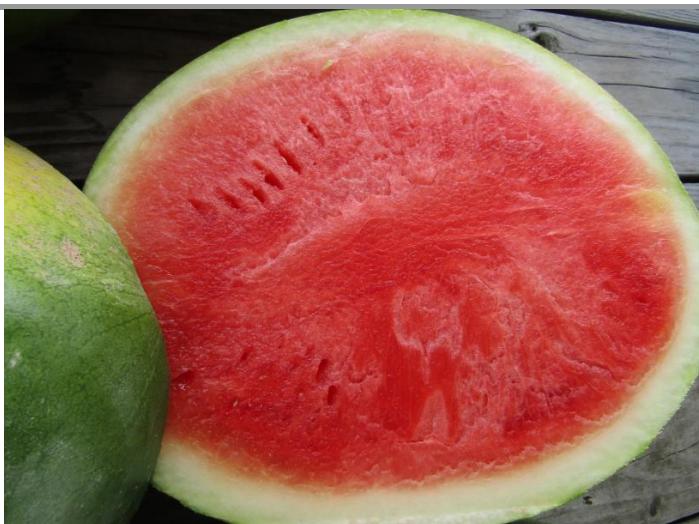
### **Nunhems**

### **Turnpike**

Marketable I Yield: 119,214 lbs/A (3)  
Marketable II Yield: 110,372 lbs/A (3)  
Fruits Per Acre: 7,145  
Mean Weight: 16.6 lbs  
Count 60-45-36-30 %: 29-27-25-16  
Soluble Solids: 11.6 %

### **Harris Moran**

## Varieties from the 2017 Seedless Watermelon Trial\*



### 9601

Marketable I Yield: 113,123 lbs/A (4)  
Marketable II Yield: 101,122 lbs/A (6)  
Fruits Per Acre: 6,396  
Mean Weight: 17.1 lbs  
Count 60-45-36-30 %: 21-19-37-15  
Soluble Solids: 11.0 %

### Nunhems



### Bottle Rocket

Marketable I Yield: 110,196 lbs/A (5)  
Marketable II Yield: 67,201 lbs/A (27)  
Fruits Per Acre: 5,359  
Mean Weight: 20.6 lbs  
Count 60-45-36-30 %: 11-25-18-46  
Soluble Solids: 10.9 %

### Seminis

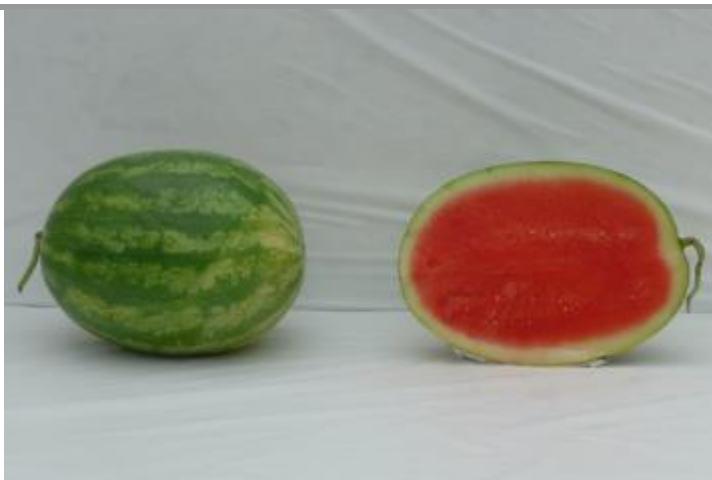


### Warrior

Marketable I Yield: 109,023 lbs/A (6)  
Marketable II Yield: 101,410 lbs/A (3)  
Fruits Per Acre: 6,569  
Mean Weight: 16.5 lbs  
Count 60-45-36-30 %: 24-35-27-13  
Soluble Solids: 10.5 %

### Nunhems

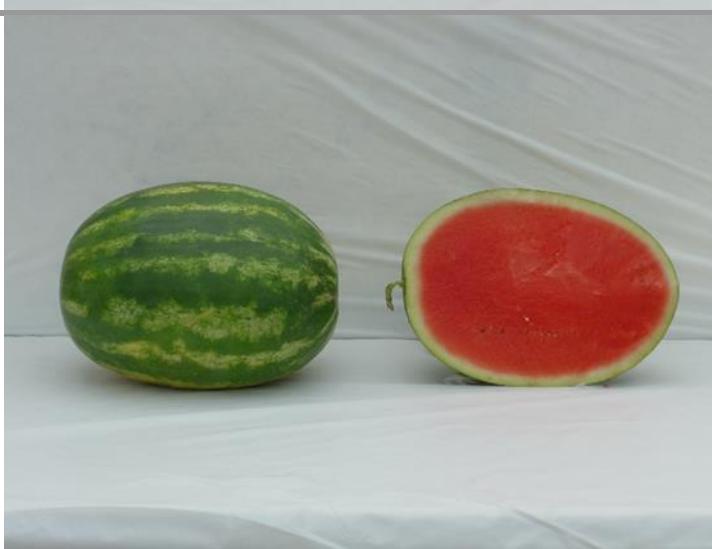
## Varieties from the 2017 Seedless Watermelon Trial\*



### **SV 0241 WA**

Marketable I Yield: 108,180 lbs/A (7)  
Marketable II Yield: 102,247 lbs/A (4)  
Fruits Per Acre: 6,684  
Mean Weight: 16.1 lbs  
Count 60-45-36-30 %: 27-36-27-9  
Soluble Solids: 10.5 %

Seminis



### **Fascination (Standard)**

Marketable I Yield: 105,398 lbs/A (8)  
Marketable II Yield: 95,020 lbs/A (8)  
Fruits Per Acre: 6,223  
Mean Weight: 16.8 lbs  
Count 60-45-36-30 %: 24-30-24-19  
Soluble Solids: 10.5 %

Syngenta



### **KB 10770**

Marketable I Yield: 104,183 lbs/A (9)  
Marketable II Yield: 92,110 lbs/A (10)  
Fruits Per Acre: 5,820  
Mean Weight: 17.7 lbs  
Count 60-45-36-30 %: 18-29-28-22  
Soluble Solids: 10.4 %

KB

## Varieties from the 2017 Seedless Watermelon Trial\*



### **ORS 6278**

Marketable I Yield: 101,864 lbs/A (10)  
Marketable II Yield: 65,467 lbs/A (31)

Fruits per Acre: 5,301

Mean Weight: 19.1 lbs

Count 60-45-36-30 %: 20-22-20-37

Soluble Solids: 10.4 %

### Origene



### **Kingman**

Marketable I Yield: 101,567 lbs/A (11)  
Marketable II Yield: 95,262 lbs/A (7)

Fruits per Acre: 6,511

Mean Weight: 15.5 lbs

Count 60-45-36-30 %: 32-39-19-9

Soluble Solids: 11.1 %

### Sakata



### **XWT 6009**

Marketable I Yield: 99,230 lbs/A (12)  
Marketable II Yield: 90,308 lbs/A (13)

Fruits per Acre: 5,762

Mean Weight: 17.0 lbs

Count 60-45-36-30 %: 22-32-22-20

Soluble Solids: 9.7 %

### Sakata

## Varieties from the 2017 Seedless Watermelon Trial\*



**XWT 6008**

Marketable I Yield: 97,641 lbs/A (13)

Marketable II Yield: 91,813 lbs/A (11)

Fruits per Acre: 5,992

Mean Weight: 16.2 lbs

Count 60-45-36-30 %: 21-44-26-8

Soluble Solids: 10.1 %

**Sakata**



**Maxima**

Marketable I Yield: 97,588 lbs/A (14)

Marketable II Yield: 69,804 lbs/A (24)

Fruits per Acre: 4,898

Mean Weight: 19.9 lbs

Count 60-45-36-30 %: 15-19-29-37

Soluble Solids: 10.8 %

**Origene**



**7197**

Marketable I Yield: 95,665 lbs/A (15)

Marketable II Yield: 89,906 lbs/A (14)

Fruits per Acre: 5,647

Mean Weight: 16.8 lbs

Count 60-45-36-30 %: 21-38-25-14

Soluble Solids: 11.1 %

**Nunhems**

## Varieties from the 2017 Seedless Watermelon Trial\*



### **ORS 6151**

Marketable I Yield: 95,604 lbs/A (16)  
Marketable II Yield: 90,850 lbs/A (12)  
Fruits per Acre: 6,511  
Mean Weight: 14.2 lbs  
Count 60-45-36-30 %: 37-33-17-5  
Soluble Solids: 10.2 %

Origene



### **7187 (Standard Check)**

Marketable I Yield: 94,850 lbs/A (17)  
Marketable II Yield: 88,418 lbs/A (15)  
Fruits per Acre: 5,474  
Mean Weight: 17.2 lbs  
Count 60-45-36-30 %: 25-22-29-22  
Soluble Solids: 10.5 %

Nunhems



### **ORS 7033 B**

Marketable I Yield: 93,766 lbs/A (18)  
Marketable II Yield: 93,766 lbs/A (9)  
Fruits per Acre: 9,968  
Mean Weight: 9.4 lbs  
Count 60-45-36-30 %: 54-4-0-0  
Small Count 4 to 7-7 to 9 lbs %: 12-29  
Soluble Solids: 9.6 %

Origene

## Varieties from the 2017 Seedless Watermelon Trial\*



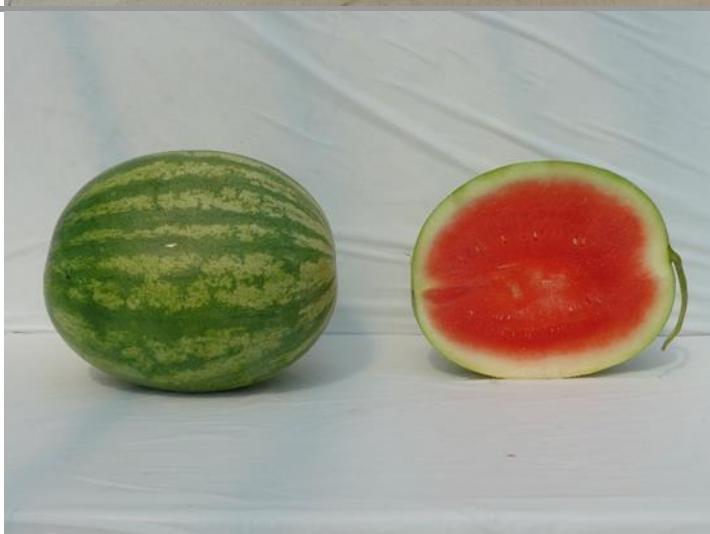
### Unbridled

Marketable I Yield: 91,669 lbs/A (19)  
Marketable II Yield: 85,994 lbs/A (16)  
Fruits per Acre: 5,416  
Mean Weight: 16.7 lbs  
Count 60-45-36-30 %: 20-29-34-15  
Soluble Solids: 11.3 %



### Captivation

Marketable I Yield: 89,356 lbs/A (20)  
Marketable II Yield: 84,995 lbs/A (17)  
Fruits per Acre: 5,070  
Mean Weight: 17.6 lbs  
Count 60-45-36-30 %: 17-28-39-16  
Soluble Solids: 11.0 %



### Syngenta

### Wolverine

Marketable I Yield: 88,918 lbs/A (18)  
Marketable II Yield: 84,220 lbs/A (18)  
Fruits per Acre: 5,243  
Mean Weight: 16.7 lbs  
Count 60-45-36-30 %: 23-31-31-13  
Soluble Solids: 10.5 %

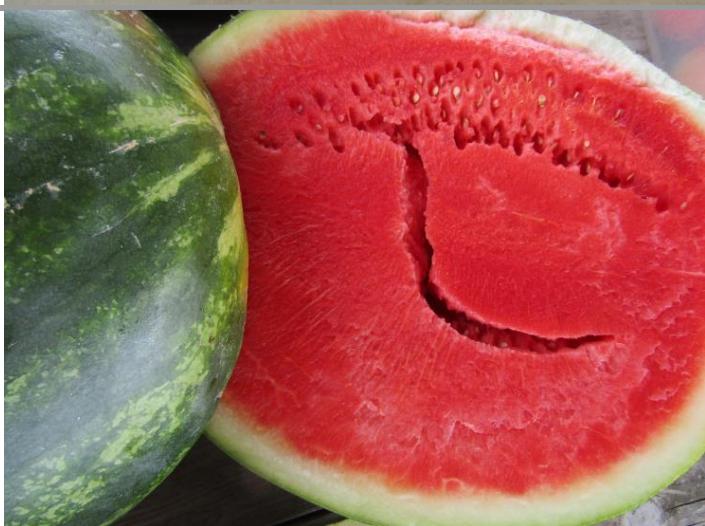
### Highmark

## Varieties from the 2017 Seedless Watermelon Trial



### Joy Ride

Marketable I Yield: 87,353 lbs/A (22)  
Marketable II Yield: 69,242 lbs/A (26)  
Fruits per Acre: 4,610  
Mean Weight: 19.0 lbs  
Count 60-45-36-30 %: 15-26-30-29  
Soluble Solids: 10.9 %



### ORS 6260

Marketable I Yield: 87,311 lbs/A (23)  
Marketable II Yield: 66,572 lbs/A (28)  
Fruits per Acre: 4,955  
Mean Weight: 17.2 lbs  
Count 60-45-36-30 %: 19-41-17-19  
Soluble Solids: 11.2 %



### Road Trip

Marketable I Yield: 86,683 lbs/A (24)  
Marketable II Yield: 71,539 lbs/A (22)  
Fruits per Acre: 4,725  
Mean Weight: 18.2 lbs  
Count 60-45-36-30 %: 19-21-36-23  
Soluble Solids: 11.7 %

### Seminis

## Varieties from the 2017 Seedless Watermelon Trial



### ORS 6305

Marketable I Yield: 84,685 lbs/A (25)  
Marketable II Yield: 56,157 lbs/A (32)  
Fruits per Acre: 4.321  
Mean Weight: 19.0 lbs  
Count 60-45-36-30 %: 18-17-23-38  
Soluble Solids: 10.7 %

Origene



### ORS 6253

Marketable I Yield: 83,832 lbs/A (26)  
Marketable II Yield: 78,858 lbs/A (19)  
Fruits per Acre: 5,186  
Mean Weight: 15.8 lbs  
Count 60-45-36-30 %: 33-39-19-9  
Soluble Solids: 10.7 %

Origene

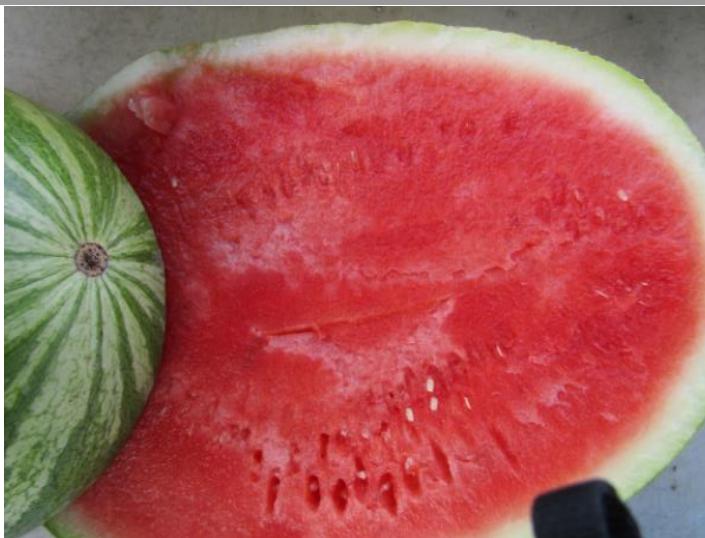


### Summer Breeze

Marketable I Yield: 80,773 lbs/A (27)  
Marketable II Yield: 65,893 lbs/A (30)  
Fruits per Acre: 4.610  
Mean Weight: 17.4 lbs  
Count 60-45-36-30 %: 23-27-27-21  
Soluble Solids: 10.9 %

Seminis

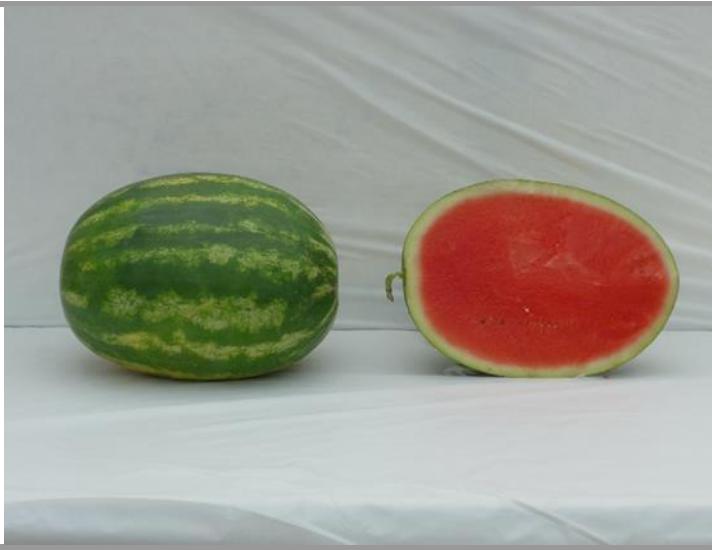
## Varieties from the 2017 Seedless Watermelon Trial\*



### **WDL 2413**

Marketable I Yield: 80,323 lbs/A (28)  
Marketable II Yield: 67,868 lbs/A (26)  
Fruits per Acre: 4,149  
Mean Weight: 17.3 lbs  
Count 60-45-36-30 %: 21-31-24-24  
Soluble Solids: 10.4 %

Syngenta



### **Charismatic**

Marketable I Yield: 79,106 lbs/A (29)  
Marketable II Yield: 76,168 lbs/A (20)  
Fruits per Acre: 4.725  
Mean Weight: 16.1 lbs  
Count 60-45-36-30 %: 17-38-34-5  
Soluble Solids: 10.3 %

Sakata



### **Secretariat**

Marketable I Yield: 78,053 lbs/A (30)  
Marketable II Yield: 75,201 lbs/A (21)  
Fruits per Acre: 5,301  
Mean Weight: 14.6 lbs  
Count 60-45-36-30 %: 39-35-19-4  
Soluble Solids: 10.8 %

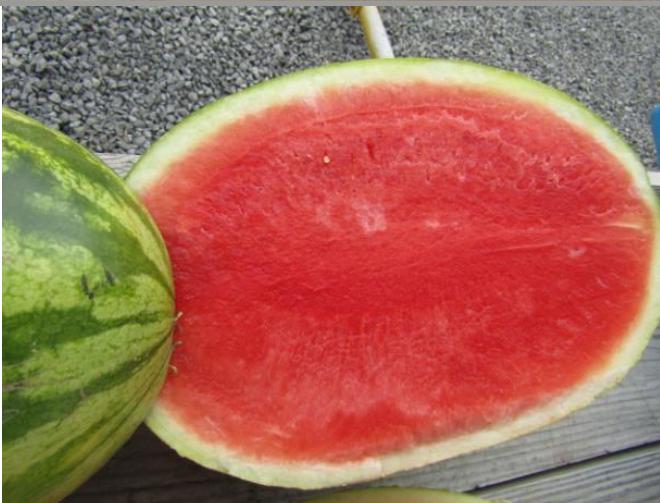
Sakata

## Varieties from the 2017 Seedless Watermelon Trial\*



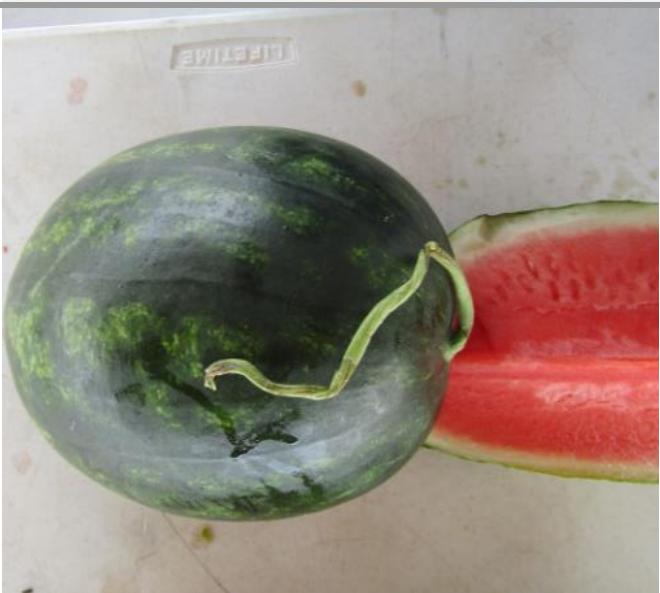
### Embassy

Marketable I Yield: 73,028 lbs/A (31)  
Marketable II Yield: 70,045 lbs/A (23)  
Fruits per Acre: 4.494  
Mean Weight: 16.0 lbs  
Count 60-45-36-30 %: 25-33-30-10  
Soluble Solids: 11.0 %



### SV 3105 WA (Tailgate)

Marketable I Yield: 69,777 lbs/A (32)  
Marketable II Yield: 51,768 lbs/A (33)  
Fruits per Acre: 3,515  
Mean Weight: 19.7 lbs  
Count 60-45-36-30 %: 10-21-24-44  
Soluble Solids: 10.9 %



### Seminis

### Mini Bee

Marketable I Yield: 66,605 lbs/A (33)  
Marketable II Yield: 66,605 lbs/A (28)  
Fruits per Acre: 8,873  
Mean Weight: 7.5 lbs  
Count 60-45-36-30 %: 18-0-0-0  
Small Count 4 to 7-7 to 9 lbs %: 41-40  
Soluble Solids: 11.0 %

### Siegers

**APPENDIX B:**  
**Weather Summary for the 2017 Watermelon Variety Trial**  
**May – September**

Appendix B1. Weather data for the Georgetown REC site May 2017.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O		
1	72.8	84.3	57.5	20.9	72.2	98.2	45.7	22.1	13.8	0	0.24	71.8	75	69		
2	71.6	77.1	57.1	17.1	59.9	91.9	23.1	26.1	14.5	0.17	0.28	71.6	74.7	69.3		
3	59.6	67.1	49.2	8.2	58.3	91.9	32.7	27.9	7.9	0	0.19	68.4	72.6	64.8		
4	56	63.5	46.7	5.1	65.9	89.5	44.7	23.5	7.4	0	0.15	66.6	71.2	62.4		
5	62.7	68.5	58.3	13.4	89.8	96.2	81.6	3	8.4	1.43	0.05	65.5	66.9	64.9		
6	59.5	67.4	51.3	9.3	76	90.2	62.3	10.6	11.7	0.01	0.12	65	66.4	62.8		
7	53.9	61.9	46.4	4.1	66.2	93.8	38.2	20.8	8.8	0.12	0.15	62.3	65.1	59.6		
8	52.3	60.3	44	2.1	53.7	96.6	26.3	29.2	7.8	0.01	0.18	62.4	67.2	58.3		
9	54.5	64.4	43.8	4.1	55.7	94	19.9	28.4	4.7	0	0.18	63.4	69.4	58.3		
10	58.9	72.4	44.2	8.3	67.5	96.7	31	23.9	3.5	0	0.17	65.1	71	59.6		
11	54.2	58.2	50.2	4.2	83.7	93	68.6	4.9	4.6	0.3	0.06	63.9	66.7	62		
12	52.4	56.4	49	2.7	80.3	94.9	65.5	10.8	5.5	0.3	0.08	62.2	64.3	60.3		
13	53.4	56.7	50.3	3.5	93.2	97.2	87.3	7.2	9.7	0.85	0.05	60.5	61.9	59.3		
14	61.9	76.3	46.5	11.4	65.6	97.6	30.2	26.2	8.7	0	0.23	62.7	68.9	57.6		
15	61.5	72.2	51.5	11.9	49.5	86.7	29	29.3	11	0	0.24	64.1	68.9	59.6		
16	64.8	78.9	47.3	13.1	59.8	93.8	30.3	28.9	4.1	0	0.21	66.1	73	60		
17	76.6	92.4	58.3	25.4	64.3	94.9	39.5	27.4	6.6	0	0.27	70.4	77.9	63.8		
18	80.2	89.6	72.4	31	58.1	71.2	44.3	27.1	10.9	0	0.31	73.8	79	69.4		
19	81.3	91.3	72.1	31.7	61.4	80.2	38.7	27	9.5	0	0.31	76.2	82	71.3		
20	64	74.7	52.2	13.5	63.8	84.3	46.7	26.8	8.7	0	0.21	74.7	77.7	71.7		
21	57.9	64.9	47.7	6.3	70.2	91.6	52.4	18.7	5.8	0	0.13	70	73.3	66.6		
22	64.4	69.5	58.9	14.2	93.5	98.6	83.1	4.7	2.7	0.59	0.05	68.9	70.4	67.6		
23	61.2	65	55.9	10.4	86.7	98.8	64.3	6.8	5.2	0.16	0.07	67.9	69.2	66.1		
24	59.4	65.2	55.7	10.4	87.5	96.9	66.2	11.4	6.4	0.15	0.09	66.5	69.7	64.4		
25	65.5	78.4	55.1	16.8	82	97.7	48.8	18.9	8.7	0.76	0.18	67.6	72.9	63.5		
26	67.4	75.5	58.9	17.2	71.2	93.2	52.7	21.3	10.7	0	0.19	68.4	71.7	64.9		
27	67.7	77.9	60.5	19.2	69.3	85.7	50.7	17.3	3.2	0	0.15	69.6	73.9	65.5		
28	65.1	75	59.6	17.3	83.3	96.8	59.7	15	4.5	0.38	0.13	70.1	73.3	67.3		
29	62.2	67.9	58.1	13	92.3	98.5	81.3	9.5	5.2	0.09	0.07	69.1	71.8	67.3		
30	61.9	67.8	57.2	12.5	93.5	98.1	86.8	5.5	5	0.2	0.05	67.4	68.7	66.3		
31	68.8	78.9	62	20.4	85.5	99	62.4	17.4	4.1	0.01	0.14	70.4	75.5	66.6		
A Day																
B	Avg Temp		(°F)				I		Avg Solar		(MJ.m <sup>-2</sup> .day <sup>-1</sup> )					
C	Max Temp		(°F)				J		Avg Wind Speed		(mph)					
D	Min Temp		(°F)				K		Rainfall		(in)					
E	GDD		(base 50 °F)				L		Ref ET		(in day <sup>-1</sup> )					
F	Avg RH		(%)				M		Avg Soil Temp		(°F)					
G	Max RH		(%)				N		Max Soil Temp		(°F)					
H	Min RH		(%)				O		Min Soil Temp		(°F)					

Appendix B2. Weather data for the Georgetown REC site June 2017.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	72.7	82.8	63.1	23	66.6	98	29.3	27.2	5.9	0	0.24	73	78	68.8
2	70.7	82	57.6	19.8	56.9	94.8	25.7	27.3	5.5	0	0.24	73.1	77.9	68.4
3	67.1	77.9	53.5	15.7	61.5	90.9	36.4	21.2	5.4	0	0.19	71.2	75.7	67.2
4	71.2	86	53.1	19.6	63.7	97.2	30.1	27.3	6.8	0	0.26	72	78	66.4
5	70	74.4	63.7	19	88.1	96.6	73.9	5.7	7.2	0.3	0.08	71.9	73.7	70.4
6	66.2	74.7	59.7	17.2	89.2	98.3	64.8	17	4.2	0.01	0.13	71.8	76.2	68.3
7	59.3	65.3	52.3	8.8	78.7	94.8	57.3	18.8	5.9	0	0.13	70.4	72.7	68.2
8	57.4	65.8	49.1	7.5	78.3	95.9	53.5	15.9	4.3	0	0.12	67.1	69.5	64.5
9	67.1	81.8	47.8	14.8	63.8	97.3	33.5	29	6.4	0.02	0.24	68.6	75.1	62.9
10	75	86.6	60.3	23.5	62.1	96.2	30.6	28	7.5	0	0.27	72.5	78.1	67.4
11	79.9	92.9	66	29.5	60.9	91.2	32.2	28.7	6.4	0	0.29	75.7	82.1	70.3
12	81.9	93.2	71.3	32.3	61.6	88	35.5	27.9	5.6	0	0.28	78.6	84.5	73.7
13	82.8	94.2	72.9	33.5	67	91.7	39.4	26.5	7.1	0	0.28	79.8	84.6	75.5
14	76.6	84.5	65.4	25	72.2	93.5	50	26.3	7	0	0.23	80.1	83.9	77
15	69.1	77.9	60.8	19.4	78.2	94	56.7	21.2	5	0	0.17	77.3	80.7	74
16	74.7	87.4	67.2	27.3	81.8	97.6	46.5	23.9	3.1	0	0.2	79.2	84.9	74.9
17	78.7	89.6	70.9	30.2	79.2	96.9	50.3	24.1	8	0	0.24	80.6	84.3	77.4
18	80.7	88.6	73.9	31.2	78.2	95.9	58.8	21.8	11.1	0	0.22	80.4	83.6	77.7
19	80.6	90.6	70.7	30.7	76.7	96.4	53.9	21.6	13.5	1.23	0.25	80.1	83.7	77.9
20	75.8	82.2	70.1	26.2	77.7	96.4	43.3	19.5	7.6	0.03	0.2	78.5	81.4	76
21	76.1	83.9	69.8	26.8	79.1	96.1	54.7	23.2	8.4	0.2	0.21	78	82.1	74.7
22	79.2	87.2	71.2	29.2	80.7	97.7	55.9	20.6	3.7	0	0.18	79.7	83.9	75.6
23	79.7	86.6	71.9	29.3	81.1	95.3	67.2	18.1	11.2	0.17	0.18	79.2	81.6	77.1
24	80.7	86.6	68.7	27.7	67	91.5	42.7	26.6	11.3	0.1	0.28	80	83.4	77.4
25	76	85.6	64.3	24.9	67.2	97.2	36.7	25.6	3.6	0	0.22	79.2	83.9	74.6
26	73.4	82.1	62.3	22.2	54.9	87.4	29.3	29.6	4.9	0	0.25	79.4	83.8	74.9
27	70.8	81.1	62.7	21.9	63.9	91.2	33	23.6	5.1	0.02	0.21	78.3	82.4	74.5
28	68.8	79.5	54.8	17.2	57.5	92.2	27.7	29.5	5.3	0	0.24	77.3	82.1	72.8
29	73.8	85.7	61.5	23.6	64.1	85	40.8	26.9	9.8	0	0.27	77.2	81.2	73.4
30	78.3	87.5	68.9	28.2	73.2	93.8	51.8	27.9	10.8	0	0.26	78.6	82.8	75
A	Day													
B	Avg Temp			(°F)			I	Avg Solar			(MJ.m <sup>-2</sup> .day <sup>-1</sup> )			
C	Max Temp			(°F)			J	Avg Wind Speed			(mph)			
D	Min Temp			(°F)			K	Rainfall			(in)			
E	GDD			(base 50 °F)			L	Ref ET			(in day <sup>-1</sup> )			
F	Avg RH			(%)			M	Avg Soil Temp			(°F)			
G	Max RH			(%)			N	Max Soil Temp			(°F)			
H	Min RH			(%)			O	Min Soil Temp			(°F)			

Appendix B3. Weather data for the Georgetown REC site July 2017.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	79	87.3	74	30.7	79	93	61	17.9	8.4	0	0.19	79.7	82.6	77.5
2	81.1	91.9	69	30.5	67.2	96.9	35	27.6	4.6	0	0.26	81.1	86.2	76.7
3	81.7	91.7	72.4	32	67.2	97.4	35.6	23.7	4.2	0	0.23	82.3	85.8	78.8
4	77.6	90.5	69.7	30.1	80.5	98.3	46.1	16.8	3.3	0	0.17	81.3	84.6	78.4
5	75.5	81.8	70.4	26.1	86.1	98.7	67.7	20.5	4.5	0	0.17	81	84.2	78.2
6	75.1	81.2	72.5	26.8	91.7	97.4	79.7	8.3	4.9	0.57	0.09	79.6	81.3	78.3
7	78	85.4	70.8	28.1	81.8	98.9	56.5	21.3	6.6	0	0.2	79.6	83.2	76.7
8	79.9	88.4	68.4	28.4	68.7	92.6	46.1	25.9	6	0	0.24	80.3	84.3	76.2
9	75.5	85.2	66	25.6	63.9	89	37.5	28.7	4.7	0	0.24	80.7	85.3	76.4
10	77.1	88.6	63.4	26	72.4	97.3	42.6	26.9	6.3	0	0.25	80.2	84	76.3
11	82	91.2	74.2	32.7	77.6	95.5	43.7	23.9	7	0	0.25	81.9	85.4	78.7
12	83.6	94.4	75.8	35.1	72.8	92.4	44.3	23.1	6.2	0	0.25	83.1	86.9	79.9
13	85.9	95	78.6	36.8	71.5	91.9	49.4	24.4	7.2	0	0.26	84.3	88	81
14	81	94	71.9	32.9	79.8	97.3	47.6	24.2	6.1	1.29	0.25	84	88.3	81.5
15	78.9	86.4	71.9	29.1	80.1	97.2	51.7	24.1	6	0.04	0.22	82.6	86.1	79.5
16	76.1	85.6	66.4	26	73.4	92.9	51.9	24.8	3.2	0	0.2	82.3	85.8	78.5
17	76.3	84.4	68.6	26.5	84.6	98.1	65.3	17.8	3.9	0	0.15	81.4	83.6	78.9
18	78.2	89.1	68.9	29	82.5	98.2	53.3	25.7	3.7	0	0.22	82.2	86.3	78.3
19	80.3	91.5	72.5	32	81.2	97.9	52.9	23.2	3.2	0.01	0.21	83.4	86.9	80.3
20	83.1	94.4	72.8	33.6	75.1	97.9	43.3	22.6	5	0.01	0.23	83.4	86.1	80.6
21	84.2	92.8	77.5	35.1	76.2	92.7	53.2	22.6	4.2	0	0.22	84.6	88.1	81.5
22	81.4	90.8	74.1	32.4	79.7	95.4	59.9	17.8	4.8	0.28	0.18	84.6	87	82.6
23	79	87.9	72.8	30.4	86.7	96.9	63.1	17.4	4.3	0.51	0.16	83.1	86.2	80.3
24	79.7	86	74.7	30.4	80	95.1	60.1	17.2	5.8	0	0.17	82.8	84.8	80.9
25	73.5	79.6	67.8	23.7	81.1	97.9	58.5	20.3	5.9	0.66	0.17	81	82.9	79.2
26	71.4	78.1	65.7	21.9	81.6	96.7	65	20.2	3.7	0	0.15	79.9	82.3	77.7
27	74	82.8	65.8	24.3	85.2	95.1	70.2	14.7	5.2	0	0.13	78.8	80.3	77.1
28	75.3	86.4	69.8	28.1	89.7	97.8	65.1	12.2	3.3	1.11	0.12	79.4	81.8	77.5
29	69.9	73.4	67.7	20.5	88.1	98.1	73.1	6	11.2	2.4	0.08	75.4	78.4	74.3
30	69.1	78.7	59.1	18.9	69.4	94.6	43.6	27.9	6.5	0	0.22	75.1	78.3	72.5
31	71.2	85	55.8	20.4	71.7	96.9	41.3	27.4	2.6	0	0.2	76.4	80.9	72.3
A	Day													
B	Avg Temp			(°F)			I			Avg Solar			(MJ.m <sup>-2</sup> .day <sup>-1</sup> )	
C	Max Temp			(°F)			J			Avg Wind Speed			(mph)	
D	Min Temp			(°F)			K			Rainfall			(in)	
E	GDD			(base 50 °F)			L			Ref ET			(in day <sup>-1</sup> )	
F	Avg RH			(%)			M			Avg Soil Temp			(°F)	
G	Max RH			(%)			N			Max Soil Temp			(°F)	
H	Min RH			(%)			O			Min Soil Temp			(°F)	

Appendix B4. Weather data for the Georgetown REC site August 2017.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	76.4	89.7	64.6	27.2	74.3	97.1	40.6	23.2	3	0	0.2	78.5	82	75.2
2	77.1	86.8	69.1	27.9	75.1	92.4	51.9	21.8	5	0	0.2	79.2	81.2	77.3
3	75	86.8	66.8	26.8	81.8	95.1	60.9	18.3	4.5	0.2	0.16	79.1	81.2	77
4	76.8	86.7	68.3	27.5	79	96.9	44.9	24.9	6.1	0	0.23	79.1	81.6	76.8
5	74.2	78.6	62.7	20.6	74.5	95.9	47.7	23.7	7.7	0	0.2	79.4	81.5	77.9
6	70.2	82.5	59.1	20.8	72.5	95	41.8	21.3	2.4	0	0.17	77.8	80.3	75.1
7	71.4	76.7	66.5	21.6	89.5	97.3	75.1	7.9	4.8	1.5	0.08	76.9	78.4	75.8
8	70.7	77.3	63.1	20.2	86.8	97.3	64.4	14.2	3.9	0.1	0.12	76.8	78.3	75.8
9	70.9	83.3	58.6	21	74.7	98	39.4	25	2.3	0	0.18	76.4	79.1	73.5
10	70	81.2	58.4	19.8	76.5	98.3	48.1	22.2	2.3	0	0.16	76.5	78.9	74
11	72.7	82.5	62.7	22.6	77.7	97.5	54.9	22.3	4	0	0.18	77.3	80.5	74.5
12	74.3	80.4	70.4	25.4	93.8	97.8	79.1	10.8	5.4	1.19	0.1	77.4	79	76
13	75.2	84.3	67.9	26.1	81.8	97.4	51.6	21.7	3.5	0.19	0.18	79	82.6	76.3
14	73.3	81.3	64.5	22.9	81.3	97.7	57.7	15.6	2.3	0	0.13	78.6	80.7	76.1
15	75.5	80.9	71.5	26.2	94	98.2	82.2	6.8	2.3	0.69	0.07	78.6	79.8	77.6
16	78	88.2	72.3	30.3	83.9	98.8	56.1	22.4	3.6	0	0.19	80.3	84.4	77.4
17	77.4	85.7	70.1	27.9	84.9	98.3	65	17.7	4.5	0	0.15	81	83.5	78.8
18	80.1	90.6	72.5	31.5	86.1	97.9	65.8	19.3	8.5	1.41	0.19	80.5	83.5	78.4
19	78.7	87	72.6	29.8	80.7	97.9	52.5	22	3.9	0	0.19	80.7	84.4	78.3
20	75.3	84.2	65.9	25	75.5	97.1	46.2	24.6	3.9	0	0.2	80.9	83.7	78.6
21	75.1	86.2	63.5	24.8	81.9	98.4	55.9	18.3	4.2	0	0.16	78.9	80.6	76.8
22	81	89.2	74.3	31.7	81.1	98.1	50	23.4	8.9	0	0.23	79.8	82	77.9
23	77.6	83.2	68.7	26	83.1	95.9	67.4	10.1	4.9	0	0.11	79.6	80.3	78.6
24	71.2	81.7	62.5	22.1	73.6	95.1	44.1	22.5	4.1	0	0.18	78	80.5	75.8
25	69.3	79.4	61	20.2	76.6	96.6	51.9	18.9	3.1	0	0.15	77	79.1	75.1
26	68.9	78.7	59.8	19.2	74.2	95.4	48.2	22	3.7	0	0.16	76.3	78.7	73.9
27	67.1	76.5	57.1	16.8	70.5	95	45.4	21	5.4	0	0.17	74.9	76.9	72.8
28	66.5	75.6	55.4	15.5	71	92.9	52.6	18.4	5.5	0	0.15	73.8	76.1	71.6
29	67.5	69.3	64.9	17.1	90.1	95.9	68.5	3.7	10.1	0	0.08	72.5	73.7	71.3
30	67	75.8	61.5	18.7	81.6	95.7	54.3	18.9	5.9	0	0.15	73	76.9	70.1
31	72.5	83.4	62.2	22.8	79.8	97.9	51.3	21.6	4.7	0.02	0.17	74.9	79.1	71.1
A	Day													
B	Avg Temp	(°F)					I	Avg Solar				(MJ.m <sup>-2</sup> .day <sup>-1</sup> )		
C	Max Temp	(°F)					J	Avg Wind Speed				(mph)		
D	Min Temp	(°F)					K	Rainfall				(in)		
E	GDD	(base 50 °F)					L	Ref ET				(in day <sup>-1</sup> )		
F	Avg RH	(%)					M	Avg Soil Temp				(°F)		
G	Max RH	(%)					N	Max Soil Temp				(°F)		
H	Min RH	(%)					O	Min Soil Temp				(°F)		

Appendix B5. Weather data for the Georgetown REC site September, 2017.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	63.7	70.3	59	14.7	70.3	92	47.2	14.3	6.2	0	0.13	73.7	76.1	72.2
2	64	69.4	59.1	14.3	85.3	98.4	68.4	5.5	4.7	0.76	0.07	71.1	72.3	70.5
3	69.3	75.3	63	19.2	84.8	98.9	61.8	15.8	5.9	0	0.13	72.5	75.3	70.6
4	69.6	80.2	57.5	18.9	74.1	98.4	42.8	22.6	5.7	0	0.18	72.6	76.4	69
5	76.3	85.7	68.2	27	73.2	93.6	49.6	21.4	9.2	0.52	0.21	74.3	77.8	71.6
6	69.5	78.1	61.9	20	89.7	97.5	67.9	11.1	6	0.48	0.1	74.3	76.8	72.9
7	65	73.4	55.7	14.5	77.8	97	43.4	21.3	6	0.02	0.16	73	75.8	71
8	63.2	74.7	51.4	13	74	97.5	38.6	21.6	3.6	0	0.15	71.1	74.5	67.8
9	60.9	71.7	52.3	12	75.3	95.9	47.2	21.8	6	0	0.15	70.7	73.8	67.7
10	60.3	71.7	49.4	10.6	76.9	95.8	48.3	20.3	5.9	0	0.14	69.6	72.7	66.7
11	62.3	73.9	50.8	12.3	78.3	97.2	48.1	19.6	3.2	0	0.13	69.6	73.1	66.2
12	65.1	75.4	56.4	15.9	80.6	97	55.2	12.4	2.3	0	0.1	70.5	72.8	68.2
13	71.7	84.2	61.8	23	86.2	97.2	59.7	13.2	4.1	0.04	0.12	71.8	75.1	69.5
14	73	79.9	66.5	23.2	81.7	97	60.9	13.4	6.3	0	0.13	72.7	74.5	71.1
15	72.7	81.9	63.6	22.8	85	98.3	57.2	13	2.4	0.03	0.11	73.2	75.4	71
16	72.6	83.7	65.2	24.4	85.6	99.1	55.1	18.6	2.8	0	0.14	74.8	78.1	72.1
17	71.4	80.4	63.4	21.9	85.4	98.8	63.7	16.7	4	0.01	0.13	74.7	77.1	72.5
18	72	76.3	68.6	22.4	88.9	96.7	75.3	8.5	9	0	0.09	74.2	75	73.3
19	71	74.7	68.9	21.8	89.5	96.1	76.8	6.6	12.6	0.39	0.08	73.1	73.8	72.5
20	74.4	83.8	68	25.9	79.7	95.6	60.3	17.1	6.7	0	0.15	73.6	76.3	71.5
21	73.8	85.1	64.5	24.8	78.2	97.9	49.7	19.2	4.4	0	0.16	74.2	77	71.7
22	71.4	79.5	65.9	22.7	78.5	97.1	42	12.2	4.2	0	0.12	73.9	75.1	72.6
23	72.6	85.3	61.8	23.6	75.7	96.4	51.3	19.3	4.2	0	0.16	73.6	76.7	70.9
24	72.6	86.8	60.5	23.6	74.6	98.3	40	19.2	2.9	0	0.15	73.4	76.4	70.5
25	71.7	84.3	60.9	22.6	81.6	97.3	54.6	18.8	4.3	0	0.15	73.5	76.5	70.8
26	72.2	77.4	67.8	22.6	89	97.5	78.3	7.3	8.6	0	0.08	73.6	74.5	72.8
27	75.7	83.4	72	27.7	91	98.3	71.3	11.8	13.1	0	0.11	73.9	75.5	73.3
28	73.2	81.2	57.7	19.5	67	96.9	34.4	18.6	9.2	0	0.2	74.2	75.9	72.2
29	60	71.6	50.2	10.9	67	92.8	41.9	18.7	4.4	0	0.13	70.7	73.2	68.4
30	58.1	67.6	49.5	8.5	69.4	92.8	45.3	14.8	8	0	0.13	68	69.4	66.8
1	63.7	70.3	59	14.7	70.3	92	47.2	14.3	6.2	0	0.13	73.7	76.1	72.2
A	Day													
B	Avg Temp			(°F)			I	Avg Solar			(MJ.m⁻².day⁻¹)			
C	Max Temp			(°F)			J	Avg Wind Speed			(mph)			
D	Min Temp			(°F)			K	Rainfall			(in)			
E	GDD			(base 50 °F)			L	Ref ET			(in day⁻¹)			
F	Avg RH			(%)			M	Avg Soil Temp			(°F)			
G	Max RH			(%)			N	Max Soil Temp			(°F)			
H	Min RH			(%)			O	Min Soil Temp			(°F)			