Seedless Watermelon Variety Trial Results 2016

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2016 University of Delaware Seedless Watermelon Variety Trial

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Introduction

The 2016 Seedless Watermelon Variety Trial included 35 varieties from ten participating companies. The purpose of this trial was to evaluate seedless watermelon varieties for yield, quality and maturity.

Materials and Methods

Location

Grower's field (Mineral Springs Field #22) next to the University of Delaware, Carvel Research Center, Gary Calloway, Calloway Farms, cooperating grower.

Cultural Practices

Grower practices for commercial production were used. The field was fertilized and limed according to soil test results. Preplant fertilizer was 80-31-144-27 (N-P_2O_5-K_2O-S). Black plastic mulch and trickle irrigation were laid on 7' centers between rye windbreaks. Additional 4-0-8 fertilizer was applied by fertigation during fruiting (additional 20-0-40 N and K_2O).

There were 35 entries in the trial in 2016. Plants were seeded in the greenhouse on April 4, 2016. Plants were transplanted to the field on May 9, 2016. Field plots were one row (7 ft) wide and 27 ft long. Plots were arranged in a randomized complete block design with three replications. In-row spacing was 3ft or 9 plants per plot. Three plants of the in-row pollenizer variety 'Sp-6' were planted in each plot and one between plots in the following arrangement: s 6 s s s 6 s s s 6 s s 6. "6" designates Sp-6 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 Sp-6 as the pollenizers, in the same arrangement as the experimental plots. There were 2 grafted treatments, grafted Fascination at the same planting arrangement and grafted Fascination planted with 7 plants per plot. This is designated as "Grafted Fascination lp" for the lower population.

Herbicides used in row middles included Sandea (halosulfuron) 0.75 oz/A + Dual (metolachlor) 1 pt/A + Sinbar (terbacil) 2 oz/A. In addition, Gramoxone (paraquat) 2 qt/A was applied with a hooded sprayer to terminate rye windbreaks.

Disease, insect and mite control programs were as follows:

5-31: Provoke (imidacloprid) 1.5 oz./a
6-15: Echo (chlorothalonil) 3 pt/A, Cueva 1.5 pt/A
6-22: Echo 3 pt/A, Cueva 1.5 pt/A Incognito 20 oz/A, Manzate 3 lbs/A
6-29: Echo 3 pt/A, Cueva 1.5 pt/A, Oberon 8 oz/A
7-6: Echo 3 pt/A, Cueva 1.5 pt/A, Zampro 14 oz/A, Portal 1 qt/A
7-13: Echo 3 pt/A, Cueva 1.5 pt/A
7-20: Echo 3 pt/A, Cueva 1.5 pt/A, Revus 8 oz/A
7-29: Echo 3 pt/A, Cueva 1.5 pt/A, Presidio 4 oz/A, Assail 4 oz/A

Irrigation was determined by the grower and was the same as the rest of the commercial field. Temperatures during the early growth period were below average and growth was slow in May.

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, the second harvest was on August 10 and 11, and the final harvest was on August 28. 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. Yields in the trial ranged from 49,686 to 124,647 lbs/A.

The highest yielding varieties in the trial in terms of Marketable Yield I in lbs/A were: Maxima, Talca, Premont, 7187, Crunchy Red, Grafted Fascination low population, Road Trip, SV7112WA, Wolverine, and Cut Above.

The highest yielding varieties in the trial in terms of Marketable Yield I in fruit/A were: Maxima, Talca, Premont, 7187, Crunchy Red, Grafted Fascination low population, Road Trip, SV7112WA, Wolverine, Cut Above, Unbridled, 7197, Wayfarer, Grafted Fascination, Traveler, ORS 6151, Razorback, and Neptune.

The highest yielding varieties in terms of Marketable Yield II in lbs/A were: Talca, Premont, Crunchy Red, Maxima, Grafted Fascination LP, 7187, Wolverine, Road Trip, Cut Above, Unbridled, Wayfarer, and 7197.

The highest yielding varieties in terms of Marketable Yield II in fruit/A were: Talca, Premont, Crunchy Red, Maxima, Grafted Fascination LP, 7187, Wolverine, Road Trip, Cut Above, Unbridled, Wayfarer, 7197, Grafted Fascination, Razorback, Neptune, ORS 6151, Poseidon, and ORS 12154a.

Table 4 reports the percent of total harvest for each harvest. The following varieties produced more than 50% of their yield on the first harvest: SV7112, Unbridled, 7197, Wayfarer, Traveler, Excursion, Secretariat, and Sweet Dawn. Those varieties with greater than 35% of their yield on the last harvest were: Maxima, Premont, Low Population Grafted Fascination, Grafted Fascination, ORS 6042b, Fascination, and ORS 12154A.

Grafted Fascination (using interspecific Cucurbita rootstock) planted at 78% of population of ungrafted Fascination yielded 22% higher. Fruits were heavier and there were significantly more fruits in the second and third harvests compared to ungrafted Fascination. Yields of grafted Fascination planted at the same population as ungrafted Fascination were not statistically different from ungrafted plots.

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). Table 6 lists the varieties according to average fruit weight and gives the yield of fruit in each of the weight classes. Maxima, ORS 6042b, and SV 7112 had the largest average fruit size while Wayfarer, ORS 12154b, and Cut Above had the smallest fruits.

ORS 12154a, Wayfarer, Cut Above, Poseidon, and ORS 12154b produced over 50 % of the melons harvested for those varieties in the 60 count class. Joy Ride, ORS 6151, Unbridled, Road Trip, ungrafted Fascination, and Secretariat also produced high numbers of fruit in the 60 count class.

Those varieties with more than 40% of the fruit harvested in the 45 count class included Summer Breeze, Crunchy Red, Charismatic, Tri-X 313, Sweet Dawn, Grafted Fascination LP, Kingman, Sugar Fresh, USA90020, 7197, Warrior, Premont, Captivation, Embasy, Razorback, Grafted Fascination, ungrafted Fascination, and Neptune.

Varieties with high numbers of 36 count fruit were Maxima, ORS 6042b, Excursion, SV7112, and Talca. Maxima and ORS 6042b produced over 30% in the 30 count class.

Table 7 lists the varieties according to their soluble solid measurements. Soluble solids averages are based on a 15-fruit sample (5 fruit per replication). There were significant differences in soluble solids among the varieties. Summer Breeze, Joy Ride, Road Trip, 7197, SV7112, Poseidon, Charismatic, Crunchy Red, ORS 6042b, Talca, and Sugar Fresh had the highest soluble solids level. All of the varieties had average soluble solids of over 10% with the exception of Neptune and ORS 12154a.

Table 8 lists the varieties according to average severity of hollow heart. Hollow heart averages are based on a 15-fruit sample (5 fruit per replication). No hollow heart was observed in Neptune, Premont, SV7112, Sweet Dawn, Talca, Traveler, and ungrafted Fascination. Low population grafted Fascination had high levels of hollow heart. Those additional varieties with one or more fruit with major or severe hollow heart (5-13% unsaleable) were USA90020, Charismatic, Embasy, Grafted Fascination, Joy Ride, ORS 6151 and Wolverine.

Table 9 lists the varieties according to the percent of fruit with enough hard seeds to render them unmarketable. Neptune, Sweet Dawn, Grafted Fascination low population, Fascination, ORS 12154a, Exclamation, Embasy, Wayfarer, and Grafted Fascination all had significant numbers of fruit over standard for hard seed.

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

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Gary Calloway, Calloway Farms for donating land, plastic mulch, drip tape, fertilizer, and for providing pest control and irrigation.

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Table 1. Entries in the 2016 Watermelon Variety Trial

Variety	Entering Company
Premont	Clifton Seed Co.
Cut Above	Clifton Seed Co.
Tri-X 313 (historical check)	Syngenta
Fascination (industry standard)	Syngenta
Exclamation	Syngenta
Captivation	Syngenta
Sweet Dawn	Syngenta
Excursion	Syngenta
Sugar Fresh	Syngenta
Grafted Fascination	Syngenta/TriHishtil
Embasy (Nun31208)	Nunhems
Warrior (NUN01009)	Nunhems
7197	Nunhems
7187 (check variety)	Nunhems
USAW90020	Siegers/US Agriseeds
Joy Ride	Seminis
Road Trip	Seminis
Summer Breeze	Seminis
SV7112WA	Seminis
Neptune	Seedway
Poseidon	Seedway
Charismatic	Sakata
Kingman	Sakata
Secretariat	Sakata
Unbridled	Sakata
Crunchy Red (check)	Harris Moran
Traveler	Harris Moran
Wayfarer	Harris Moran
Talca	Origene Seeds
Maxima	Origene Seeds
ORS 6042b	Origene Seeds
ORS 6151	Origene Seeds
ORS 12154a	Origene Seeds
Wolverine	Highmark Seed Co.
Razorback	Highmark Seed Co.

Table 2. 2016 Seedless Watermelon Variety Trial: Varieties by Marketable I Yield (all marketable fruit) in Lbs/a and Fruit/a and Fruits per Harvest

Variety	Yields and Harvest Distribution								
					Fruit per harvest		
	Marketable I lbs/a		Marketable I Fruits/a		Harvest 1 85 DAT	Harvest 2 95 DAT	Harvest 3 111 DAT
Maxima	124647	a	6607	abcd	2305	1844	2458
Talca	121848	ab	7068	abc	3303	2074	1690
Premont	110750	abc	7529	a	2843	1690	2996
7187	106175	abcd	6607	abcd	2766	1690	2151
Crunchy Red	105152	abcde	6607	abcd	2919	2382	1306
Grafted Fascination LP	104522	abcdef	6761	abcd	615	2843	3303
Road Trip	101075	abcdefg	7068	abc	3227	2382	1460
SV 7112	100435	abcdefgh	5608	abcdefg	2151	1076	1076
Wolverine	99108	abcdefghi	6377	abcde	2843	2151	1383
Cut Above	98290	abcdefghij	7375	ab	3073	2843	1460
Unbridled	90026	bcdefghijk	6223	abcdef	3303	1306	1613
7197	89819	bcdefghijk	5992	abcdefg	3150	1613	1229
Wayfarer	88899	cdefghijk	7298	ab	3995	1690	1613
Grafted Fascination	84768	cdefghijkl	5839	abcdefg	1690	1537	2612
Traveler	84585	cdefghijkl	5608	abcdefg	2843	1306	1460
ORS 6151	83840	cdefghijkl	5762	abcdefg	1460	2382	1921
Tri-X 313	82712	cdefghijkl	5301	cdefgi	2074	1460	1767
Razorback	81896	cdefghijklm	5608	abcdefg	2228	2074	1306
Charismatic	81730	cdefghijklm	5224	cdefgi	2074	1844	1306
ORS 6042b	81100	cdefghijklm	4302	fgi	1767	922	1613
Excursion	80708	cdefghijklm	4610	efgi	2382	1229	999
Neptune	80278	cdefghijklm	5762	abcdefg	3073	1690	999
Warrior	77755	defghijklm	5224	cdefgi	2382	1229	1613
Sugar Fresh	74868	defghijklm	4917	defgi	2305	1076	1537
Poseidon	73649	efghijklm	5455	bcdefg	2535	1767	1152
Fascination	72491	fghijklm	5070	defgi	1076	1997	1997
90020	68873	ghijklm	4533	efgi	1844	1537	1152
Summer Breeze	68547	hijklm	4302	fgi	1767	2382	768
Kingman	67936	ijklm	4456	efgi	1537	2151	1152
Exclamation	67400	ijklm	4610	efgi	1229	1997	1383
ORS 12154a	66716	ijklm	5455	bcdefg	1076	1767	2612
Secretariat	65990	jklm	4917	defgi	2996	999	1613
Joy Ride	62614	klm	4149	gi	1767	1537	845
Captivation	59890	klm	4072	gi	1037	2074	1306
Sweet Dawn	54724	lm	3534	i	1997	691	845
Embasy	49686	m	3380	i	1383	999	999
p-value	***0.0002***		***0.0002***				
$LSD_{0.05}$	**30732**		**1925**				

Table 3. 2016 Seedless Watermelon Variety Trial: Varieties by Marketable II Yield (excluding fruit less than 9 lbs and over 24 lbs) in Lbs/a and Fruit/a and Fruits per Harvest

Variety	Yields and Harvest Distribution								
					Fruit per harvest		
	Marketable II lbs/a		Marketable II Fruits/a		Harvest 1 85 DAT	Harvest 2 95 DAT	Harvest 3 111 DAT
Talca	115779	a	6837	abcd	3227	2074	1537
Premont	106786	ab	7375	a	2843	1613	2919
Crunchy Red	105152	ab	6607	abcde	2919	2382	1306
Maxima	104565	abc	5839	abcdefgh	1844	1767	2228
Grafted Fascination LP	104522	abc	6761	abcd	615	2843	3303
7187	100015	abcd	6377	abcdef	2689	1690	1997
Wolverine	99108	abcd	6377	abcdef	2843	2151	1383
Road Trip	98885	abcd	6991	abc	3227	2382	1383
Cut Above	98290	abcde	7375	a	3073	2843	1460
Unbridled	90026	abcdef	6223	abcdefg	3303	1306	1613
Wayfarer	88899	abcdef	7298	ab	3995	1690	1613
7197	87821	abcdef	5916	abcdefgh	3150	1613	1152
SV 7112	83301	bcdefg	4994	defghijk	2151	922	999
Tri-X 313	82712	bcdefg	5301	cdefghij	2074	1460	1767
Grafted Fascination	82540	bcdefg	5762	abcdefgh	1690	1537	2535
Razorback	81896	bcdefg	5608	abcdefgh	2228	2074	1306
Neptune	80278	bcdefgh	5762	abcdefgh	3073	1690	999
ORS 6151	79969	bcdefgh	5608	abcdefgh	1460	2305	1844
Excursion	78575	bcdefgh	4533	fghijk	2305	1229	999
Charismatic	77884	bcdefgh	5070	cdefghijk	1997	1844	1229
Warrior	77755	bcdefgh	5224	cdefghij	2382	1229	1613
Traveler	77210	bcdefgh	5378	bcdefghi	2843	1306	1229
Poseidon	73649	cdefgh	5455	abcdefghi	2535	1767	1152
Sugar Fresh	70873	defgh	4763	efghijk	2305	1076	1537
Fascination	70455	defgh	4994	defghijk	1076	1997	1921
Exclamation	67400	efgh	4610	fghijk	1229	1997	1383
ORS 12154a	66716	fgh	5455	abcdefghi	1076	1767	2612
90020	66568	fgh	4456	fghijk	1844	1537	1076
Secretariat	65990	fgh	4917	defghijk	2766	922	1306
Kingman	65883	fgh	4379	ghijk	1537	2074	1152
Joy Ride	62614	fgh	4149	hijk	1767	1537	845
Summer Breeze	62531	fgh	4072	hijk	1767	2382	615
Captivation	59890	fgh	4072	hijk	1037	2074	1306
Sweet Dawn	54724	gh	3534	ijk	1997	691	845
ORS 6042b	53011	gh	3227	k	1076	615	1537
Embasy	49686	h	3380	jk	1383	999	999
p-value	***0.0003***		***0.0002***				
$LSD_{0.05}$	**29598**		**1930**				

Table 4. 2016 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 85 DAT	Harvest 2 95 DAT	Harvest 3 111 DAT
Maxima	34.9	27.9	37.2
Talca	46.7	29.3	23.9
Premont	37.8	22.4	39.8
7187	41.9	25.6	32.6
Crunchy Red	44.2	36.1	19.8
Grafted Fascination LP	9.1	42.0	48.9
Road Trip	45.7	33.7	20.7
SV 7112	50.0	25.0	25.0
Wolverine	44.6	33.7	21.7
Cut Above	41.7	38.5	19.8
Unbridled	53.1	21.0	25.9
7197	52.6	26.9	20.5
Wayfarer	54.7	23.2	22.1
Grafted Fascination	28.9	26.3	44.7
Traveler	50.7	23.3	26.0
ORS 6151	25.3	41.3	33.3
Tri-X 313	39.1	27.5	33.3
Razorback	39.7	37.0	23.3
Charismatic	39.7	35.3	25.0
ORS 6042b	41.1	21.4	37.5
Excursion	51.7	26.7	21.7
Neptune	53.3	29.3	17.3
Warrior	45.6	23.5	30.9
Sugar Fresh	46.9	21.9	31.3
Poseidon	46.5	32.4	21.1
Fascination	21.2	39.4	39.4
90020	40.7	33.9	25.4
Summer Breeze	35.9	48.4	15.6
Kingman	31.8	44.4	23.8
Exclamation	26.7	43.3	30.0
ORS 12154a	19.7	32.4	47.9
Secretariat	53.4	17.8	28.8
Joy Ride	42.6	37.0	20.4
Captivation	23.5	47.0	29.6
Sweet Dawn	56.5	19.6	23.9
Embasy	40.9	29.5	29.5

Table 5. 2016 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			
			60 Count 9.0-13.5 lbs	45 Count 13.6-17.5 lbs	36 Count 17.6-21.4 lbs	30 Count 21.5 lbs plus
Maxima	18.87	a	15.1	22.1	32.6	30.2
ORS 6042b	18.85	a	19.6	21.4	25.0	33.9
SV 7112	17.91	ab	30.4	39.3	30.4	7.1
Excursion	17.51	b	15.0	35.0	33.3	16.7
Talca	17.24	bc	17.4	35.9	33.7	13.0
7187	16.07	cd	27.1	40.0	27.1	5.9
Summer Breeze	15.93	d	23.4	35.9	21.9	9.4
Crunchy Red	15.92	de	25.6	43.0	23.3	8.1
Charismatic	15.64	def	30.9	41.2	22.1	5.9
Tri-X 313	15.60	def	30.4	42.0	20.3	7.2
Wolverine	15.54	def	33.3	33.3	30.9	2.5
Sweet Dawn	15.49	defg	26.7	44.4	26.7	2.2
Grafted Fascination LP	15.46	defg	28.4	45.5	22.7	3.4
Kingman	15.25	defg	32.8	44.8	17.2	5.2
Sugar Fresh	15.23	defg	40.3	41.9	11.3	0.0
90020	15.19	defg	32.8	43.1	15.5	8.6
Joy Ride	15.13	defgh	38.9	33.3	20.4	7.4
Traveler	15.09	defgh	40.8	36.6	18.3	4.2
7197	15.08	defgh	37.2	42.3	16.7	3.8
Warrior	14.99	defgh	37.3	43.3	14.9	4.5
Premont	14.88	efghi	35.4	44.8	14.6	5.2
Captivation	14.71	efghi	35.8	47.2	15.1	1.9
Embasy	14.71	efghi	38.6	45.5	15.9	0.0
Exclamation	14.70	fghij	39.0	39.0	20.3	1.7
Razorback	14.62	fghij	37.0	45.2	12.3	5.5
ORS 6151	14.60	fghij	45.9	31.1	17.6	5.4
Grafted Fascination	14.55	fghijk	40.5	44.6	10.8	4.1
Unbridled	14.52	fghijk	45.7	43.2	11.1	0.0
Road Trip	14.47	ghijk	48.9	33.7	14.1	3.3
Fascination	14.30	ghijk	42.2	40.6	14.1	3.1
Neptune	14.30	hijk	40.5	45.9	12.2	1.4
Poseidon	13.93	ijk	54.9	32.4	9.9	2.8
Secretariat	13.50	jkl	42.5	32.9	9.6	23.3
Cut Above	13.42	klm	56.8	36.8	5.3	1.1
ORS 12154a	13.33	lm	73.9	23.2	2.9	0.0
Wayfarer	12.23	m	65.1	29.1	5.8	0.0
***p*-value**	***<0.0001***					
LSD 0.05	***1.21***					

Table 6. 2016 Seedless Watermelon Variety Trial: Varieties by Average Fruit Weight and Number/Acre of Fruit in Each Size Class

Variety	Mean Marketable I Weight (lbs)		No/A of Fruit in Each Size Class			
			60 Count 9.0-13.5 lbs	45 Count 13.6-17.5 lbs	36 Count 17.6-21.4 lbs	30 Count 21.5 lbs plus
Maxima	18.87	a	1001	1463	2156	2002
ORS 6042b	18.85	a	847	924	1078	1463
SV 7112	17.91	ab	1309	1694	1309	308
Excursion	17.51	b	693	1617	1540	770
Talca	17.24	bc	1232	2541	2387	924
7187	16.07	cd	1771	2618	1771	385
Summer Breeze	15.93	d	1155	1771	1078	462
Crunchy Red	15.92	de	1694	2849	1540	539
Charismatic	15.64	def	1617	2156	1155	308
Tri-X 313	15.60	def	1617	2233	1078	385
Wolverine	15.54	def	2079	2079	1925	154
Sweet Dawn	15.49	defg	924	1540	924	77
Grafted Fascination LP	15.46	defg	1925	3080	1540	231
Kingman	15.25	defg	1463	2002	770	231
Sugar Fresh	15.23	defg	1925	2002	539	0
90020	15.19	defg	1463	1925	693	385
Joy Ride	15.13	defgh	1617	1386	847	308
Traveler	15.09	defgh	2233	2002	1001	231
7197	15.08	defgh	2233	2541	1001	231
Warrior	14.99	defgh	1925	2233	770	231
Premont	14.88	efghi	2618	3311	1078	385
Captivation	14.71	efghi	1463	1925	616	77
Embasy	14.71	efghi	1309	1540	539	0
Exclamation	14.70	fghij	1771	1771	924	77
Razorback	14.62	fghij	2079	2541	693	308
ORS 6151	14.60	fghij	2618	1771	1001	308
Grafted Fascination	14.55	fghijk	2310	2541	616	231
Unbridled	14.52	fghijk	2849	2695	693	0
Road Trip	14.47	ghijk	3465	2387	1001	231
Fascination	14.30	ghijk	2079	2002	693	154
Neptune	14.30	hijk	2310	2618	693	77
Poseidon	13.93	ijk	3003	1771	539	154
Secretariat	13.50	jkl	2387	1848	539	1309
Cut Above	13.42	klm	4158	2695	385	77
ORS 12154a	13.33	lm	3927	1232	154	0
Wayfarer	12.23	m	4312	1925	385	0
***p*-value**	***<0.0001***					
LSD 0.05	***1.21***					

Table 7. 2016 Seedless Watermelon Variety Trial: Varieties by Soluble Solid Content

Variety	% Soluble Solids	
Summer Breeze	11.49	a
Joy Ride	11.38	ab
Road Trip	11.34	abc
7197	11.29	abcd
SV7112	11.19	abcde
Poseidon	11.19	abcde
Charismatic	11.15	abcde
Crunchy Red	10.97	abcdef
ORS 6042b	10.97	abcdef
Talca	10.95	abcdefg
Sugar Fresh	10.94	abcdefgh
90020	10.89	bcdefgh
Warrior	10.89	bcdefgh
ORS 6151	10.75	cdefghi
Kingman	10.72	defghi
Tri-X 313	10.71	defghi
Premont	10.69	efghi
Cut Above	10.65	efghi
Secretariat	10.65	efghi
Traveler	10.63	efghi
Grafted Fascination	10.62	efghi
Excursion	10.61	efghi
Unbridled	10.58	fghi
Embasy	10.58	fghi
Grafted Fascination lp	10.58	efghi
Maxima	10.56	fghi
Wolverine	10.55	fghi
Razorback	10.54	fghi
Captivation	10.50	fghi
Wayfarer	10.36	hi
Fascination	10.36	ghi
Exclamation	10.28	i
7187	10.22	ij
Sweet Dawn	10.22	ij
Neptune	9.65	jk
ORS 12154a	9.61	k
p-value	***<0.0001***	
LSD 0.05	***0.59***	

Table 8. 2016 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
Grafted Fascination lp	2.13	a	7.7	30.8	15.4	0.0
Kingman	1.53	b	13.3	20.0	0.0	0.0
Embasy	1.47	bc	6.7	0.0	13.3	0.0
90020	1.47	bcd	16.7	5.6	5.6	0.0
Tri-X 313	1.47	bcd	6.7	20.0	0.0	0.0
Charismatic	1.45	bcd	10.0	5.0	10.0	0.0
Secretariat	1.40	bcde	13.3	13.3	0.0	0.0
Wolverine	1.33	bcdef	6.7	6.7	6.7	0.0
Grafted Fascination	1.30	bcdef	13.3	0.0	6.7	0.0
ORS 12154a	1.27	bcdef	13.3	6.7	0.0	0.0
ORS 6042b	1.27	bcdef	0.0	13.3	0.0	0.0
ORS 6151	1.27	bcdef	6.7	0.0	6.7	0.0
Poseidon	1.27	bcdef	13.3	6.7	0.0	0.0
Joy Ride	1.20	bcdef	0.0	0.0	6.7	0.0
7197	1.13	cdef	0.0	0.0	0.0	0.0
Cut Above	1.13	cdef	0.0	6.7	0.0	0.0
Unbridled	1.13	cdef	0.0	6.7	0.0	0.0
Wayfarer	1.13	cdef	10.5	0.0	0.0	0.0
Crunchy Red	1.10	cdef	0.0	6.7	0.0	0.0
Summer Breeze	1.09	def	15.4	0.0	0.0	0.0
Captivation	1.08	cdef	7.1	0.0	0.0	0.0
7187	1.07	ef	6.7	0.0	0.0	0.0
Exclamation	1.07	ef	6.7	0.0	0.0	0.0
Excursion	1.07	ef	6.7	0.0	0.0	0.0
Maxima	1.07	ef	6.7	0.0	0.0	0.0
Razorback	1.07	ef	6.7	0.0	0.0	0.0
Road Trip	1.07	ef	6.7	0.0	0.0	0.0
Warrior	1.07	ef	6.7	0.0	0.0	0.0
Neptune	1.00	f	0.0	0.0	0.0	0.0
Premont	1.00	f	0.0	0.0	0.0	0.0
SV7112	1.00	f	0.0	0.0	0.0	0.0
Sweet Dawn	1.00	f	0.0	0.0	0.0	0.0
Talca	1.00	f	0.0	0.0	0.0	0.0
Traveler	1.00	f	0.0	0.0	0.0	0.0
Fascination	1.00	f	0.0	0.0	0.0	0.0
Sugar Fresh	1.00	f	0.0	0.0	0.0	0.0
p-value	*0.0001*					
LSD 0.05	*0.39*					

Table 9. 2016 Seedless Watermelon Variety Trial: Percent of Sampled Fruit Above Standard for Mature Seeds*

Variety	% Above Standard for Mature Seeds
ORS 6151	0
7197	0
Cut Above	0
7187	0
Warrior	0
Sugar Fresh	0
Maxima	0
Kingman	0
Summer Breeze	0
Traveler	0
Talca	0
Captivation	0
Road Trip	0
Tri-X 313	0
ORS 6042b	0
Charismatic	0
90020	0
Secretariat	0
Razorback	0
Joy Ride	0
Premont	7
Wolverine	7
Unbridled	7
Excursion	7
Crunchy Red	7
SV7112	7
Poseidon	7
Neptune	13
Sweet Dawn	13
Grafted Fascination lp	20
Fascination	20
ORS 12154a	33
Exclamation	33
Embasy	33
Wayfarer	33
Grafted Fascination	40

* 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 2016 Seedless Watermelon Variety Trial

Varieties from the 2016 Seedless Watermelon Trial

Maxima

Marketable I Yield: 124,647 lbs/A (1)
Marketable II Yield:104,565 lbs/A (4)
Mean Weight: 18.9 lbs
Fruits Per Acre: 6,607
Count Distribution %: 15-22-32-30
Soluble Solids: 10.6 %

Origene

Talca

Marketable I Yield: 121,848 lbs/A (2)
Marketable II Yield: 115,779 lbs/A (1)
Mean Weight: 17.2 lbs (5)
Fruits Per Acre: 7,068
Count Distribution %: 20-21-25-34
Soluble Solids: 11.0 %

Origene

Premont

Marketable I Yield: 110,750lbs/A (3)
Marketable II Yield: 106,786 lbs/A (2)
Mean Weight: 14.7 lbs
Fruits per acre: 7,375
Count Distribution % 35-45-15-5
Soluble Solids: 10.7 %

Clifton

Varieties from the 2016 Seedless Watermelon Trial*

7187
(Standard Check)

Marketable I Yield: 106,175 lbs/A (4)
Marketable II Yield: 100,015 lbs/A (6)
Mean Weight: 16.6 lbs
Fruits per Acre: 6,607
Count Distribution %: 27-40-27-6
Soluble Solids: 10.2 %

Nunhems

Crunchy Red
(Standard Check)

Marketable I Yield: 105,152 lbs/A (5)
Marketable II Yield: 105,152 lbs/A (3)
Mean Weight: 15.9 lbs (4)
Fruits per Acre: 6,607
Count Distribution %: 26-43-23-8
Soluble Solids: 11.0 %

Harris Moran

Road Trip

Marketable I Yield: 101,075 lbs/A (7)
Marketable II Yield: 98,885 lbs/A (8)
Mean Weight: 14.3 lbs
Fruits per Acre: 7,068
Count Disribution %: 49-34-14-3
Soluble Solids: 11.3 %

Seminis

Varieties from the 2016 Seedless Watermelon Trial*

SV 7112

Marketable I Yield: 100,432 lbs/A (8)
Marketable II Yield: 83,301 lbs/A (13)
Mean Weight: 17.9 lbs (3)
Fruits per Acre: 5,608
Count Distribution %: 30-39-30-7
Soluble Solids: 11.2 %

Seminis

Wolverine

Marketable I Yield: 99,108 (9)
Marketable II Yield: 99,108 (7)
Mean Weight: 15.5 (11)
Fruits per Acre: 6,377
Count Distribution %: 33-33-31-3
Soluble Solids: 10.6%

Highmark

Cut Above

Marketable I Yield: 98,290 (10)
Marketable II Yield: 98,290 (9)
Mean Weight: 13.3 lbs (34)
Fruits per Acre: 7,375
Size Distribution %: 57-37-5-1
Soluble Solids: 11.2% (13)

Clifton

Varieties from the 2016 Seedless Watermelon Trial*

Unbridled

Marketable I Yield: 90,206 lbs/A (11)
Marketable II Yield: 90,206 lbs/A (10)
Mean Weight: 14.5 lbs (28)
Fruits per Acre: 6,223
Count Distribution %: 46-43-11-0
Soluble Solids: 10.6 %

Sakata

7197

Marketable I Yield: 89,819 lbs/A (12)
Marketable II Yield: 87,821 (12)
Mean Weight: 15.0 (19)
Fruits per Acre: 5,992
Count Distribution %: 37-42-17-4
Soluble Solids: 11.3 %

Nunhems

Wayfarer

Marketable I Yield: 88,899 lbs/A (13)
Marketable II Yield: 88,899 lbs/A (11)
Mean Weight: 12.2 (35)
Fruits per Acre: 7,298
Count Distribution %: 65-29-6-0
Soluble Solids: 11.3 %

Harris Moran

Varieties from the 2016 Seedless Watermelon Trial*

Traveller

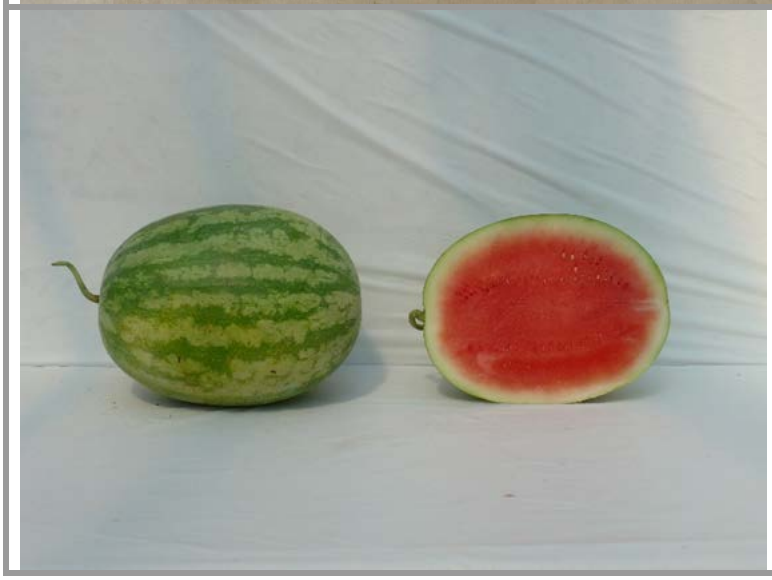
Marketable I Yield: 84,585 lbs/A (15)
Marketable II Yield: 77,210 lbs/A (22)
Mean Weight: 15.1 lbs (18)
Fruits per Acre: 5,608
Count Distribution %: 41-37-18-4
Soluble Solids: 10.6 %

Harris Moran

ORS 6151

Marketable I Yield: 83,840 lbs/A (16)
Marketable II Yield: 79,969 lbs/A (18)
Mean Weight: 14.6 (26)
Fruits per Acre: 5,762
Count Distribution %: 46-31-18-5
Soluble Solids: 10.8 %

Origene



Tri-X 313
(Historical Standard)

Marketable I Yield: 82,712 lbs/A (17)
Marketable II Yield: 82,712 lbs/A (14)
Mean Weight: 15.6 lbs (10)
Fruits per Acre: 5,301
Count Distribution %: 30-42-20-7
Soluble Solids: 10.9% (31)

Syngenta

Varieties from the 2016 Seedless Watermelon Trial*

Razorback

Marketable I Yield: 81,986 lbs/A (18)
Marketable II Yield: 81896 lbs/A (16)
Mean Weight: 14.6 lbs (25)
Fruits per Acre: 5,608
Count Distribution %: 37-45-12-5
Soluble Solids: 11.6% (3)

Highmark

Charismatic

Marketable I Yield: 81,730 lbs/A (19)
Marketable II Yield: 77,884 lbs/A (20)
Mean Weight: 15.6 lbs (9)
Fruits per Acre: 5,224
Count Distribution %: 31-41-22-6
Soluble Solids: 11.2 %

Sakata

ORS 6042b

Marketable I Yield: 81,100 lbs/A (20)
Marketable II Yield: 53,011 lbs/A (35)
Mean Weight: 18.9 lbs (2)
Fruits per acre: 4,302
Count Distribution %: 20-21-25-34
Soluble Solids: 11.0 %

Origene

Varieties from the 2016 Seedless Watermelon Trial*

Excursion

Marketable I Yield: 80,708 lbs/A (21)
Marketable II Yield: 74,730 lbs/A (19)
Mean Weight: 17.5 lbs (4)
Fruits per Acre: 4,610
Count Distribution %: 15-35-33-17
Soluble Solids: 10.6%

Syngenta

Neptune

Marketable I Yield: 80,278 lbs/A (22)
Marketable II Yield: 80,278 lbs/A (17)
Mean Weight: 13.9 lbs (31)
Fruits per Acre: 5,762
Count Distribution %: 41-46-12-1
Soluble Solids: 9.7%

Seedway

Warrior

Marketable I Yield: 77,755 lbs/A (23)
Marketable II Yield: 767,755 lbs/A (21)
Mean Weight: 14.9 lbs (22)
Fruits per Acre: 5,224
Count Distribution %: 37-43-15-5
Soluble Solids: 10.9%

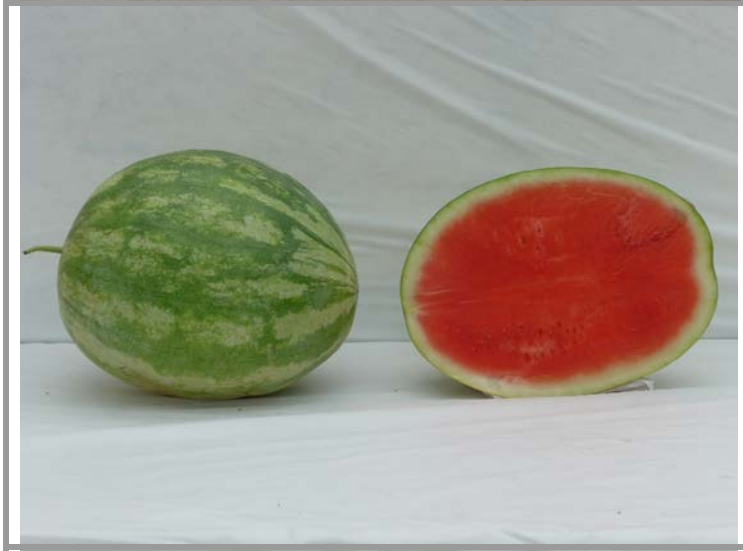
Nunhems

Varieties from the 2016 Seedless Watermelon Trial

Sugar Fresh

Marketable I Yield: 74,868 lbs/A (24)
Marketable II Yield: 70.873 lbs/A (24)
Mean Weight: 15.2 lbs (15)
Fruits per Acre: 4,917
Count Distribution %: 40-42-11-0
Soluble Solids: 10.9%

Syngenta



Poseidon

Marketable I Yield: 73,649 lbs/A (25)
Marketable II Yield: 73,649 lbs/A (23)
Mean Weight: 13.5 lbs (32)
Fruits per Acre: 5,455
Count Distribution %: 55-32-10-3
Soluble Solids: 11.2%

Seedway

Fascination

Marketable I Yield: 72,491 lbs/A (26)
Marketable II Yield: 70,455 lbs/A (25)
Mean Weight: 14.3 lbs (25)
Fruits per Acre: 5,070
Count Distribution %: 42-41-14-3
Soluble Solids: 10.4%

Syngenta

Varieties from the 2016 Seedless Watermelon Trial*

USA W90020

Marketable I Yield: 72,491 lbs/A (27)
Marketable II Yield: 70,455 lbs/A (28)
Mean Weight: 15.2 lbs (16)
Fruits per Acre: 4.533
Count Distribution %: 33-43-16-9
Soluble Solids: 10.9%

Siegers/US Agriseeds

Summer Breeze

Marketable I Yield: 72,491 lbs/A (28)
Marketable II Yield: 70,455 lbs/A (32)
Mean Weight: 15.9 lbs (7)
Fruits per Acre: 4.302
Count Distribution %: 23-36-22-9
Soluble Solids: 11.5%

Seminis

Kingman

Marketable I Yield: 67,936 lbs/A (29)
Marketable II Yield: 65,883 lbs/A (30)
Mean Weight: 15.2 lbs (14)
Fruits per Acre: 4.456
Count Distribution %: 33-45-17-5
Soluble Solids: 10.7%

Sakata

Varieties from the 2016 Seedless Watermelon Trial*

Exclamation

Marketable I Yield: 67,400 lbs/A (30)
Marketable II Yield: 67,400 lbs/A (26)
Mean Weight: 14.6 lbs (24)
Fruits per Acre: 4,610
Count Distribution %: 39-39-20-2
Soluble Solids: 10.3%

Syngenta

ORS 12154a

Marketable I Yield: 66.716 lbs/A (31)
Marketable II Yield: 66.716 lbs/A (27)
Mean Weight: 12.2 lbs (35)
Fruits per Acre: 5,455
Count Distribution %: 74-23-3-0
Soluble Solids: 9.6%

Origene

Secretariat

Marketable I Yield: 65,990 lbs/A (32)
Marketable II Yield: 65,990 lbs/A (29)
Mean Weight: 13.4 lbs (33)
Fruits per Acre: 4,917
Count Distribution %: 43-33-10-0
Soluble Solids: 10.7%

Sakata

Varieties from the 2016 Seedless Watermelon Trial*

Joy Ride

Marketable I Yield: 62,614 lbs/A (33)
Marketable II Yield: 62,614 lbs/A (31)
Mean Weight: 15.1 lbs (17)
Fruits per Acre: 4,149
Count Distribution %: 39-33-20-7
Soluble Solids: 11.4%

Seminis

Captivation

Marketable I Yield: 59,890 lbs/A (34)
Marketable II Yield: 59,890 lbs/A (33)
Mean Weight: 14.7 lbs (22)
Fruits per Acre: 4,072
Count Distribution %: 36-47-15-2
Soluble Solids: 10.5%

Syngenta

Sweet Dawn

Marketable I Yield: 54,724 lbs/A (35)
Marketable II Yield: 54,724 lbs/A (34)
Mean Weight: 15.5 lbs (12)
Fruits per Acre: 3,534
Count Distribution %: 27-44-27-2
Soluble Solids: 10.5%

Syngenta

Varieties from the 2016 Seedless Watermelon Trial*

Embasy

Marketable I Yield: 49,686 lbs/A (36)
Marketable II Yield: 49,686 lbs/A (36)
Mean Weight: 14.7 lbs (23)
Fruits per Acre: 3,380
Count Distribution %: 39-45-14-2
Soluble Solids: 10.6%

Nunhems

APPENDIX B:
Weather Summary for the 2016 Watermelon Variety Trial
May – August

Appendix B1. Weather data for the Georgetown REC site May 2016.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	51.8	54.3	48.8	1.6	95	99.3	86.4	3.2	2.7	0.49	0.03	57.4	58.5	56.6
2	61.8	77.7	50.9	14.3	90.4	100	67	17.5	4.5	0.43	0.13	61.2	67.9	56.7
3	62.3	70.1	50.2	10.1	93.8	98.5	73.2	9.5	5.2	0.3	0.08	64.7	67.6	63
4	51.5	54.2	49.6	1.9	96.2	98.9	91.5	5.2	6.1	1.1	0.04	60.8	63.8	59.3
5	49.9	52.2	48.4	0.3	91.9	98.2	84.7	5.6	6.8	0	0.04	58.2	59.3	57.4
6	50	54	47.4	0.7	93.2	98.3	79.6	7.9	5.1	0.66	0.05	57.8	59.7	55.9
7	54.2	62.3	48.9	5.6	86.5	98.4	63.4	13.3	3.5	0.01	0.09	59.3	63	56.6
8	60.3	71.7	49	10.3	64.2	94.2	26	23.2	6.5	0	0.19	61.7	66.5	57.7
9	56.9	67.2	43.1	5.1	75.2	96.3	41.2	11.4	3.3	0.01	0.1	60.1	62.7	56.6
10	57.2	64.4	51.8	8.1	72.8	95.4	52	13.3	3.2	0	0.1	61.9	65.2	59.6
11	57.5	70.2	51.4	10.8	88.2	98.7	66.9	7.7	2.8	0.37	0.07	61.9	64.4	59.8
12	62.5	70.5	56.4	13.4	90.4	99.6	73.5	12	2.5	0	0.09	64.1	67.8	61.2
13	62.9	70.1	55.4	12.8	93.9	98.4	85.2	5.7	4.2	0.15	0.05	64.3	66	62.7
14	63.7	76.6	51.7	14.1	75.2	98.4	41.2	22.3	6.1	0.16	0.18	65.6	71.5	60.5
15	53	60.3	47.2	3.7	53.1	79	28.8	22.7	9.4	0	0.18	64.2	67.5	61
16	52.1	63.1	37.4	0.3	54.2	93.6	27.4	27.7	5.8	0	0.17	63	69.4	57.4
17	55.3	63.7	48.7	6.2	82.9	97.6	59.2	7.1	3.5	0.24	0.07	62	63.6	60.5
18	57.3	64.5	51.5	8	79	98.6	51.3	19.7	3.9	0	0.13	63.2	68.4	59.2
19	60.2	71.9	52.2	12.1	63.1	90.2	35.5	21.7	3.6	0	0.16	65.3	71.7	60.6
20	62	75.9	46.2	11.1	58.5	96.8	24.1	25.9	2.6	0	0.18	66.4	73.8	59.8
21	57.7	61.7	53.7	7.7	90.8	98.3	77.2	4.9	5.4	0.92	0.05	64	67.2	62.7
22	55.9	58.5	53.5	6	96.7	98.9	90.5	5.2	5.5	0.14	0.04	62.2	63.4	61.1
23	60.5	68.4	55	11.7	79.5	98.2	49.2	16.1	4.1	0.01	0.13	64.1	68.8	60.5
24	67	80.3	56.5	18.4	69.3	96.9	32.3	22	5	0.01	0.2	67.3	73.5	62.8
25	73.2	85.8	57.4	21.6	55	92.2	25.2	25	4.2	0	0.22	70.3	76.6	64
26	76.1	89.5	58.3	23.9	56.7	92.9	24.6	26.7	5.3	0	0.26	72.4	79.2	66.2
27	76.9	88.4	68	28.2	63.9	87.2	42.8	24.8	8.3	0	0.26	74.7	80.6	69.9
28	75.9	88.1	64.6	26.3	61.7	88.9	29.6	25.4	6.8	0	0.27	75.5	81.8	70.6
29	71.8	83.4	56.9	20.1	84.9	98.7	60.2	16.7	3.7	0.01	0.14	74.1	77.7	69.6
30	71.6	75.5	67.1	21.3	95.3	97.7	91.7	4.6	4.3	1.8	0.05	73.5	74.8	72.3
31	72.6	83.6	64.9	24.3	87.4	99.4	60.4	17.7	2.5	0.23	0.15	74.8	80.3	70.4

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)

Appendix B2. Weather data for the Georgetown REC site June 2016.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	73.7	82.7	64.5	23.6	78.5	98.6	48	25.6	2.8	0	0.2	76.9	82.7	71.9
2	67.4	71.9	65.5	18.7	93.9	98.6	83.3	9.2	3.3	0	0.08	75	76.7	73.5
3	68.1	74.7	64.3	19.5	92.1	99.7	77	9.2	2.6	0.01	0.08	73.9	76.2	72.1
4	71.4	82.2	62.5	22.3	81.5	98.7	60.3	19.3	2.4	0	0.15	75.1	79.6	70.9
5	75.3	85.7	66.1	25.9	82.8	97.2	64	17.4	7.6	0.04	0.17	75.9	79.4	73
6	77.9	85.3	70.9	28.1	69.1	95.6	34.6	23.8	6.9	0	0.24	78.2	83.2	74.2
7	75.5	88.1	63.9	26	71.8	93.2	22.5	21.3	5.3	0.06	0.24	78.7	84.1	75.2
8	65.5	74.1	54.3	14.2	56.6	86.9	27.4	25.7	8.1	0	0.23	74.4	77.8	71
9	66.2	79.1	50.6	14.9	51.8	85.2	26.6	27.5	6.1	0	0.24	72.5	78.3	67.2
10	67.1	79.1	55.4	17.2	49.6	86.6	20.7	27.9	5.3	0	0.24	73.4	79.1	68.4
11	76.2	89.2	59.2	24.2	66.4	94.3	41.4	24.1	7	0	0.24	75.1	80.9	69.9
12	82.5	93.3	68.6	31	45.2	73.6	13.3	25.8	9.5	0	0.37	78	82.8	74.3
13	69.4	77.8	60.6	19.2	50.4	68.8	35.3	26.8	5.9	0	0.23	76.3	82.1	71.3
14	70.7	79.2	61.9	20.5	49.4	76.4	25	28	4.8	0	0.24	77.9	83.9	73.5
15	67.8	77.8	56.5	17.1	71.5	95.6	51.1	11.3	2.5	0	0.11	74.5	77.1	71.7
16	66.7	69.9	64.2	17.1	91.8	98.3	67.6	5.9	3.3	0.54	0.07	73.3	74.7	72.2
17	67.9	78.2	62.4	20.3	77.9	97.5	36.1	22.2	4.6	0.25	0.19	74	80	70.1
18	69	81.2	56.6	18.9	60.4	98.4	24.7	28.1	3.4	0	0.22	75.1	82.7	68.5
19	74.3	87.9	57.2	22.6	53.5	89.5	22.9	27.5	3.7	0	0.24	76.6	84.1	70
20	77.7	89.1	63.7	26.4	53.5	91.5	25.1	27.3	5.1	0	0.26	78.7	85.1	73
21	75.2	87.2	67.3	27.3	76	96.1	55.2	13.6	6.7	0.87	0.16	77.5	81.8	74.6
22	75	82.4	65.7	24.1	68.4	97.3	37.6	21.8	5.7	0	0.21	75.4	78.4	72.5
23	72.9	80.3	64.4	22.4	84.8	95.8	66.2	12.5	3.4	0.14	0.12	75.1	78.7	71.9
24	73	82.1	68.1	25.1	88.8	97.8	64.8	15	3.5	1.98	0.13	76.6	80.9	73.9
25	71.6	79.9	62.6	21.2	75.3	96.5	35.8	25.9	4.7	0	0.21	77.3	82.4	73.6
26	69.6	80.9	57	19	71	98.4	29.3	27.5	2.3	0	0.2	76.9	83	71.4
27	73.1	85.5	60.3	22.9	75.8	99.1	28.7	25.1	5	0	0.23	78.1	84	73.4
28	74	78.7	71.4	25	89.8	97.2	77.3	9.9	5.1	0.16	0.1	77.9	79.8	76.2
29	75.4	85	66.1	25.6	72.3	97.7	35.8	25.8	4.5	0	0.23	78.8	83.4	75.1
30	73.8	84.6	62	23.3	68.3	95.5	40.9	23.4	3.1	0	0.19	78.4	83.7	73.5

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)

Appendix B3. Weather data for the Georgetown REC site July 2016.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	75.5	85.1	68.6	26.8	83.3	96.9	56.4	16.2	5	0.09	0.16	78.9	82.2	76.3
2	73.5	80.4	65.5	23	65.4	95.8	32.7	27.3	5	0	0.23	78.5	82.7	74.9
3	65.3	70.2	59.5	14.9	87.3	97.4	71.7	8.1	2.1	0.32	0.07	75.4	78.1	73.3
4	69.2	74.1	62.4	18.3	91.9	98.5	73.6	8.4	3.5	0.04	0.08	74.1	75.8	72.1
5	81.1	89.8	73.3	31.6	77	96.6	51.1	23.7	6.4	0	0.23	78.3	83.5	74.4
6	81.4	90.3	72.4	31.4	80.6	97.3	57	20.4	2	0	0.18	81.6	86.3	77.3
7	83	92.2	74.2	33.2	76.4	97	47.2	23.9	3.9	0	0.22	83	87.7	78.9
8	82.2	92.7	75.2	33.9	74.7	94.7	44.5	22.6	3.3	0	0.21	83.8	88.5	80.1
9	78.9	89.3	72.4	30.9	86.3	98.3	58.2	18.2	2.7	0	0.16	83.2	86.9	80.2
10	76.5	83	69.2	26.1	67.5	95.3	46.5	22.4	5	0	0.2	81.6	84.3	78.9
11	74.4	85.1	63.6	24.4	65.9	90.8	35.6	27	4	0	0.23	80.8	85.7	76.6
12	74.3	85.3	62.6	23.9	74.4	97.9	43.6	25.4	3.2	0	0.21	80.8	85.8	76.3
13	76	85.5	69.4	27.5	88.3	96.8	67.1	10.4	3.3	0.56	0.11	80.1	82.4	78.3
14	83	91.6	75.2	33.4	79.8	98.5	51.8	25.4	5.1	0	0.23	82.7	88.7	78
15	83.2	91.1	75	33.1	71.1	92.9	47.5	25.5	4.2	0	0.23	84.1	88.7	80
16	80.6	88.6	72.7	30.7	77.7	96.8	52.7	19.5	4.1	0	0.19	83.6	86.7	80.3
17	79.4	90.1	70.6	30.4	73.4	94.6	47.2	24.8	3.7	0	0.22	83.6	88.5	79.5
18	80.4	92.1	72.2	32.2	79.3	96.6	45.8	23.3	6.1	0.44	0.24	83.6	88.1	80.4
19	78.4	87.8	71.9	29.8	76.7	97.1	43.7	22	3.4	0	0.2	83.2	88	79.5
20	75.3	83.8	66.1	25	81.1	97.4	61.1	20.6	2.8	0.45	0.17	82	85.6	78.1
21	76.4	87.3	65.6	26.4	77.7	98	41.4	25	1.9	0	0.2	82.5	87.5	77.8
22	80.1	90.2	70.4	30.3	78.6	96	52	22.4	5.5	0	0.21	82.5	86.3	79.1
23	84.2	95	74.4	34.7	72.4	94.6	40.4	24.9	4	0	0.24	83.8	88.3	80.2
24	83.8	93.3	74.4	33.9	66	95.4	34.4	24	2.7	0	0.22	84.9	88.4	81.5
25	85.6	95.9	76.3	36.1	74.7	96	45.9	23.4	5.1	0.01	0.24	85.5	89.3	82.4
26	81.5	92.6	73	32.8	79	96.7	50.9	21.9	3.4	1.34	0.2	84.3	88.4	80.9
27	83.3	93.4	75.9	34.7	77.4	96.1	37.8	21.4	2.4	0.01	0.2	85.8	89	83
28	79.1	90.5	72.9	31.7	88.1	98.1	61.4	14	2.8	2.29	0.14	84.2	86.4	81.5
29	77.2	86.1	72.2	29.2	85.8	98.3	56.7	15.6	3.4	0.13	0.15	82	84.3	80.4
30	77.9	87	70.5	28.7	82.2	98.6	54.7	19.4	3.4	0	0.17	82.3	84.5	80
31	81	89.7	73.8	31.8	81	97.4	54.7	23.2	3.3	0.04	0.2	83.3	86.6	80.6

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)

Appendix B4. Weather data for the Georgetown REC site August 2016.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	77.6	88.2	72.4	30.3	86.9	97.4	65	17.4	3.1	0.26	0.15	83.4	85.6	81.8
2	76.1	83.7	68.9	26.3	82.9	98.4	64.3	22	3.7	0	0.17	82.2	85.4	79.7
3	72.4	79.4	65.7	22.6	77.9	95.5	59	22.4	3.6	0	0.17	80.5	83.3	77.9
4	71.9	81.6	61.8	21.7	76.9	96.7	53.8	24	2.6	0	0.18	79.6	83.1	76.4
5	73	84.8	61.2	23	76.2	98.6	45.5	21.9	2.6	0	0.17	79.6	83.5	76
6	79.2	88.3	70.8	29.6	86.2	97.6	65.9	18.7	4.2	0.58	0.17	81.4	85.5	78.4
7	77.9	86.9	67.9	27.4	70.8	96.4	36.1	25.3	3.8	0	0.22	81.9	85.2	79.2
8	74	87.9	63.2	25.5	78.2	98.3	36.7	17.3	2.2	0	0.16	80.3	83.4	77.1
9	74.4	85.4	63.7	24.6	85.4	98.5	59.1	16.1	2.4	0	0.14	79.2	81.7	76.7
10	80.7	89.4	73	31.2	80.7	97.7	50.6	21.6	5	0	0.2	80.9	84.1	78.2
11	82.3	90	75.1	32.6	79	97.8	55.8	23.4	5.8	0	0.21	82.4	86.1	79.5
12	83.3	90.4	76.9	33.7	80.1	95.9	62.5	22.4	6.5	0	0.21	83.4	86.8	80.3
13	85.6	93.3	78.7	36	78	96.4	52.9	23.7	6.3	0	0.23	84.5	88.1	81.6
14	86.6	95.4	76.5	35.9	70.9	90.1	45	22.9	5.2	0	0.24	85.3	88.7	82.4
15	82.4	94.4	72.4	33.4	74.8	96	44.6	22.6	2.5	0	0.2	85.2	89.1	81.7
16	82.2	92	72.7	32.3	80.1	96.9	55.7	21.5	5.5	0.4	0.21	84.8	88.2	81.6
17	83.6	90.6	72	31.3	74	95.8	52	19.7	5.4	0.65	0.2	84.2	86.7	82
18	77.6	86.5	70.6	28.5	84.6	98.2	59.4	18.3	3	0.08	0.16	82.6	85.5	80.2
19	78.5	88.4	69.9	29.2	78.6	98.4	49.5	22	2.7	0	0.18	82.8	86	79.8
20	77.6	88.7	66.6	27.7	78.1	98.9	47.8	22.7	1.8	0	0.18	82.5	86.1	79
21	76.9	88.7	68.9	28.8	85.8	98.9	59.2	16.8	3.9	0.96	0.15	81.3	84.1	79.2
22	73.3	81.7	63.3	22.5	74.4	98.2	45.3	23.8	5.1	0	0.19	79.9	82.2	77.7
23	69.4	81.9	57.1	19.5	68.5	96.7	36	24.1	1.8	0	0.17	78.3	82	74.9
24	70.6	84.2	57.1	20.7	73.9	98.9	40	23.1	1.9	0	0.17	78.4	82.6	74.6
25	73.9	85.4	60	22.7	79.2	97.6	57	19.7	4.4	0	0.16	78.2	81	75.2
26	81	92.7	71.2	31.9	76.3	96.3	45.7	21.9	3.5	0	0.2	80.3	83.7	77.2
27	77.6	86.8	68.9	27.8	74.1	97.2	39.5	22.6	2.9	0	0.19	80.4	82.8	77.9
28	75.2	85.6	64.6	25.1	76.9	99.2	44.3	22.3	2.5	0	0.17	79.7	82.4	76.9
29	75.4	89.1	62	25.6	76.3	98.7	45.7	20.8	2.2	0	0.16	79.4	82.5	76.4
30	77.1	89.1	68.6	28.8	78.2	97.9	43.8	21.1	2.4	0	0.17	80.2	83	77.5
31	76.1	89.2	65.4	27.3	78.7	99.7	39.6	20.4	1.9	0	0.16	80.3	83.3	77.7

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)