

Mini Seedless Watermelon Variety Trial Results 2019



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

Introduction.....	3
Materials and Methods.....	3
Results	4
Table 1. Entries in the 2019 University of Delaware Mini Seedless Watermelon Variety Trial.....	6
Table 2. 2019 Mini Seedless Watermelon Variety Trial: Varieties by Marketable Yield (all marketable fruit over 2.9 lbs) in Lbs/a and Fruits/a and Fruits per Harvest	7
Table 3. 2019 Mini Seedless Watermelon Variety Trial: Varieties by Average Fruit Weight and Percent of Fruit in Each Size Class.....	8
Table 4. 2019 Mini Seedless Watermelon Variety Trial: Summary of Quality and Attribute Data (mean values).....	9
APPENDIX A: Variety Photos from the 2019 Mini Seedless Variety Trial.....	10
APPENDIX B: Weather Summary for the 2019 Mini Seedless Watermelon Variety Trial June – September	11

2019 University of Delaware Mini 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 gcjohn@udel.edu emmalea@udel.edu

Introduction

The 2019 Mini Seedless Watermelon Variety Trial included 16 varieties from five participating companies. The purpose of this trial was to evaluate seedless mini watermelon varieties for yield and quality for mid-late summer harvest.

Materials and Methods

Trial Design

The trial was a Randomized Complete Block with 3 replications. Plots were 1 row, 30' in length.

Location and Soil Type

Field 6 B-C, University of Delaware Thurman Adams Research Farm, Carvel Research and Education Center, Georgetown, Delaware. The soil type was a Rosedale Loamy Sand.

Cultural Practices

The field was fertilized and limed according to soil test results. Preplant fertilizer was 50-0-160-72 (N-P₂O₅-K₂O-S). 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 May 5, 2019. Plants were transplanted to the field on June 4, 2019. 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 for seedless plants was 2 ft with 15 plants per plot. Six pollinizer plants, three each of the in-row pollinizer varieties SP7 and Minipol, were planted in each plot and one between plots in the following arrangement: s 7 s s s M s s s 7 s s s M s s s 7 s s M. "7" designates "SP7", M designates "Minipol", and "s" designates the seedless plants. The border rows next to the drive rows, which separated the replications, were planted in the triploid variety 'Wayfarer', with the same pollinizers, in the same arrangement as the experimental plots.

Herbicides applied with a shielded sprayer to row middles on 5-30-19 were Gramoxone 2 qt/A, Reflex 12 oz/A, Dual 1.5 pt/A, and Prowl 2 pt/A. Select Max was applied post plant on 6-21-19 at a rate of 16 oz/A.

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

6-14-19: Quadris Top 2 pt/A, Warrior 2 oz/A, Inspire Super 1 pt/A

6-24-19: Bravo 3 pt/A, Inspire Super 16 oz/A, Reaper 10 oz/A, Sniper 6 oz/A, Topsin 10 oz/A

7-2-19: Bravo 3 pt/A, Orondis Ultra 8 oz/A, Aprovia Top 14 oz/A, Reaper 10 oz/A, Sniper 7 oz/A, Topsin 8 oz/A, Tactic 1 pt/A
7-11-19: Bravo 3 pt/A, Aprovia Top 14 oz/A, Reaper 10 oz/A, Sniper 7 oz/A, Topsin 8 oz/A, Tactic 1 pt/A
7-17-19: Bravo 3 pt/A, Orondis Ultra 8 oz/A, Aprovia Top 14 oz/A, Assail 4 oz/A
7-25-19: Bravo 3 pt/A, Orondis Ultra 8 oz/A, Aprovia Top 14 oz/A, Assail 4 oz/A
8-9-19: Bravo 3 pt/A, Agrimek 10 oz/A, Topsin 8 oz/A, Inspire Super 16 oz/A, Ranman 3 oz/A
8-16-19: Bravo 3 pt/A, Actigard .75 oz/A, Topsin 8 oz/A, Aprovia Top 14 oz/A, Quadris Top 14 oz/A, Orondis Ultra 8 oz/A, Lanate 3 pt/A
8-22-19: Mancozeb 3 pt/A, Topsin 8 oz/A, Inspire Super 16 oz/A, Ranman 3 oz/A, Actigard .75 oz/A
8-28-19: Bravo 3 pt/A, Aprovia Top 14 oz/A, Topsin 8 oz/A, Assail 4 oz/A,

Irrigation was applied regularly as determined by experiment station farm staff.

The summer growing season was hot with 27 days over 90 F. Rainfall for the growing season was 11.91 inches with no rainfall over 1.0 inch in 24 hours. Disease pressure was moderate and yields were moderate to high.

Harvest

Fruit were harvested four times. The first harvest was on August 14 at 71 days after transplanting (DAT), the second harvest was 79 DAT, the third harvest was at 83 DAT and the final harvest was in September at 99 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

Marketable yield excluding misshapen culls and fruit less than 3 lbs are reported in Table 2 in both pounds per acre and fruit per acre for each variety. Yields in the trial ranged from 62,566 to 95,166 lbs/A.

Highest yielding varieties in lbs/A in the trial included ORS 7204 C, Extazy, 31502, ORS 7204 G, and ORS 70258 with yields ranging from 95,166 lbs/A to 80237 lbs/A. Highest yielding varieties in number of fruits per acre were 31502 (12,030), Beach Ball (12,376) and Mini Bee (12,375). Nectaro, Ocelot, and ORS 7163 had significantly lower yields than the top group (62,566, 65,405, and 66,143 lbs/A respectively).

The harvest was concentrated with over 75% of melons ready in a one-week period (harvests 2-3). There was little extended harvest.

Table 3 lists the varieties according to average fruit weight and gives the percentage of fruit in each of five weight classes: <4 lbs, 4-6 lbs, 6-8 lbs, 8-10 lbs, and >10 lbs. Fruit weights were greater than expected with many varieties having significant yields over 10 lbs in weight (not

desirable for a mini watermelon). Nectaro and Mini Bee had 11.1% of melons harvested less than 4 lbs. Those varieties with >30% 4-6 lb melons were Mini Bee, Paragon, Beach Ball and Ocelot. ORS 12748, Sirius, ORS 7241, Nectaro, Beach Ball, Paragon, Mini Bee, and Ocelot produced over 30% of melons between 6-8 lbs. ORS 7204 C, Extazy, 31502, and Sirius had over 30 percent in the 8-10 lbs class. ORS 7204 C, ORS 7204 G, Extazy, and ORS 7163 had over 20% of melons 10 lbs or greater.

These results suggest that closer planting is required to achieve desired weight classes for mini watermelons under Delaware growing conditions in the main season.

Quality and attribute data for mini varieties are given in Table 4. Soluble solids were lower than expected. Beach Ball, Mini Bee, ORS 7241, Paragon, and Sirius had soluble solids less than 10. The varieties with the highest soluble solids were 31502 and ORS 70258 (10.6)

Hard seeds were present at significant levels in several varieties (Table 4). ORS 7204 G and Beach Ball averaged over 6 hard seeds per melon. Mini Bee, ORS 70258, and ORS 7163 also had significant levels of hard seed.

Beach Ball had significant interior quality issues and most melons cut were not marketable.

There was minor or no hollow heart detected in the varieties tested.

Photos of varieties are shown in Appendix A.

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Participating Companies.

Hazera, Syngenta, and HM Clause for donation of seed for border rows and pollenizers.

Table 1. Entries in the 2019 University of Delaware Mini Seedless Watermelon Variety Trial

Variety	Entering Company
Extazy	Hazera
Nectaro	Hazera
Ocelot	Hazera
Ana	OriGene
Early Riser	OriGene
ORS 7204 C	OriGene
ORS 70258	OriGene
ORS 7163	OriGene
ORS 7241	OriGene
ORS 12748	OriGene
ORS 7204 G	OriGene
Paragon	OriGene
Mini Bee	Siegers
Beach Ball	Seedway/Seminis
Sirius	Seedway
31502	Seedway

Table 2. 2019 Mini Seedless Watermelon Variety Trial: Varieties by Marketable Yield (all marketable fruit over 2.9 lbs) in Lbs/A and Fruits/A and Fruits per Harvest

Variety	Yields and Harvest Distribution					
			Fruits per harvest (No/a)			
	Marketable lbs/A	Marketable Fruits/A	Harvest 1 71 DAT	Harvest 2-3 79-83 DAT	Harvest 3 99 DAT	
ORS 7204 C	95166 a	11270 abc	737	9718	469	
Extazy	94718 a	11685 ab	366	8839	1097	
31502	90449 ab	12030 ab	389	9780	1101	
ORS 7204 G	83846 abc	11270 abc	719	7839	915	
ORS 70258	80237 abcd	10302 abc	415	8781	1106	
ORS 7241	79705 abcd	11062 abc	337	8258	393	
Ana	78940 abcde	11233 abc	868	10264	553	
Beach Ball ₁	76728 bcde	12376 a	403	10417	1210	
Mini Bee	75579 bcde	12376 a	680	9270	1112	
ORS 12748	75472 bcde	10302 abc	1047	10091	1238	
Sirius	71197 cde	9887 abc	400	8607	534	
Paragon	67484 cde	10924 abc	814	10354	518	
Early Riser	67483 cde	9472 bc	905	9542	823	
ORS 7163	66143 de	8988 c	730	7498	1659	
Ocelot	65405 de	11685 ab	806	10033	1538	
Nectaro	62566 e	9541 bc	488	9931	814	
<i>p-value</i>	0.0031	0.032				
LSD_{0.05}	16594	3654				

₁Beach Ball had significant interior quality issues and most melons cut were not marketable.

Table 3. 2019 Mini Seedless Watermelon Variety Trial: Varieties by Average Fruit Weight and Percent of Fruit in Each Size Class

Variety	Mean Marketable Weight (lbs)		Percent of Fruit in Each Size Class				
			<4 lbs	4 to 6 lbs.	6 to 8 lbs.	8 to 10 lbs.	> 10 lbs
ORS 7204 C	8.46	a	4.3	13.5	22.7	34.4	25.2
ORS 7204 G	8.37	a	3.4	17.2	23.4	26.2	29.7
Extazy	8.11	ab	0.0	17.8	28.4	33.1	20.7
ORS 70258	7.79	bc	5.4	26.8	26.2	26.2	15.4
Ana	7.75	bc	2.7	20.9	28.4	28.4	19.6
31502	7.48	cd	5.7	24.1	23.6	31.6	14.9
ORS 12748	7.33	cd	4.6	23.1	30.8	27.7	13.8
ORS 7163	7.33	cd	1.3	24.2	27.5	25.5	21.5
Sirius	7.20	d	0.7	20.3	45.5	30.8	2.8
ORS 7241	7.17	d	3.8	23.1	38.8	28.1	6.3
Early Riser	7.10	de	6.6	29.9	26.3	26.3	10.9
Nectaro	6.59	ef	10.1	31.9	34.8	15.2	8.0
Beach Ball	6.20	f	1.1	45.3	38.5	9.5	5.6
Paragon	6.19	f	8.2	40.5	36.1	10.1	5.1
Mini Bee	6.13	f	10.1	38.0	35.2	12.8	3.9
Ocelot	5.59	g	8.3	50.3	37.9	3.0	0.6
p-value	<0.0001						
LSD 0.05	0.51						

Table 4. 2019 Mini Seedless Watermelon Variety Trial: Summary of Quality and Attribute Data (mean values).

Variety	Soluble Solids %	Hollow Heart	Hard Seed
31502	10.60 a	1.00	0.00 e
Ana	10.17 abcde	1.13	0.60 de
Beach Ball	9.56 fg	1.40	6.50 a
Early Riser	9.93 ef	1.13	0.93 de
Extazy	10.40 abcde	1.00	0.30 e
Mini Bee	8.91 hi	1.00	3.47 b
Nectaro	9.95 def	1.00	0.50 de
Ocelot	10.19 abcde	1.00	0.47 e
ORS 12748	10.50 abc	1.00	0.10 e
ORS 70258	10.60 a	1.00	2.73 bc
ORS 7163	10.03 cdef	1.00	2.27 bcd
ORS 7204 C	10.53 ab	1.20	0.85 de
ORS 7204 G	10.05 bcdef	1.00	6.60 a
ORS 7241	9.00 ghi	1.00	0.60 de
Paragon	9.10 gh	1.27	0.73 de
Sirius	8.20 i	1.20	1.40 cde
p-value	<0.001	NS	<0.001
LSD 0.05	0.49		1.66

Hollow Heart (HH) Severity Rating (1 = no HH, 2 = minor HH, 3 moderate HH, 4 = major HH, 5 = Severe HH)

**Appendix A.
Variety Photos from the 2019 Mini Seedless Variety Trial**

		
ORS 7204 G	Early Riser	Mini Bee
		
ORS 7163	ORS 7204 C	ORS 70258
		
ORS 12748	Ocelot	Paragon
		
31502	Sirius	Extazy
		
Beach Ball	Nectaro	Ana

APPENDIX B:
Weather Summary for the 2019 Mini Seedless Watermelon Variety Trial
June – September

Appendix B1. Weather data for the Georgetown REC site June 2019.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	72.8	80.3	66.4	23.4	77.9	100	48.5	20.1	4.2	0	0.17	76.7	80.1	73.4
2	74.7	85.8	62.7	24.2	72.4	99.2	44.6	24.3	7.8	0.06	0.23	76.3	81.3	72
3	67.5	75.5	53.9	14.7	58.5	95.1	25.3	28.5	7.1	0	0.23	75.2	79.4	71.6
4	63.1	74.6	48.9	11.8	57.7	94.3	27	29.7	5.4	0	0.22	72.9	79.1	67.1
5	72.3	85.3	62.1	23.7	81.9	99	61.2	18.4	10.8	0.34	0.18	73.5	77.4	70
6	78	86.8	71.4	29.1	81.3	98.4	54.1	23.5	7	0.1	0.22	76.6	82.2	72.4
7	73.4	79.3	66.6	23	81.3	98.3	63.7	17.6	4.2	0	0.15	76.8	80.1	74
8	68.3	75.5	62.8	19.1	78.9	98.7	45.2	21.5	6.1	0	0.18	74.7	78.1	71.8
9	68.2	72.4	65	18.7	87.7	99	76.9	8.2	7.4	0.13	0.08	72.4	74	71
10	74.4	84.6	66.1	25.3	93	100	71.8	15	6.1	0.74	0.14	73.8	77.9	70.4
11	70.7	77.5	60.2	18.9	73.5	100	40.1	26.8	9.4	0.28	0.23	75	78.1	72.7
12	66.9	73.9	57.3	15.6	71.3	98.3	51.7	24.9	5.2	0	0.18	72.4	76.1	68.7
13	68.6	76.8	62	19.4	87.8	99.6	71.6	14.6	7.8	0.71	0.12	72.9	76	70
14	65.6	73.6	58	15.8	67.8	99.3	37.2	27.3	9.2	0.04	0.22	71.6	74.2	68.9
15	70	81.3	55.1	18.2	63.8	95.8	29.8	29	8.7	0	0.26	70.9	75.5	66.5
16	77.1	85.9	66.5	26.2	71.4	88.3	55.5	25.1	11	0	0.24	73.5	77.7	69.7
17	80	90.9	70.2	30.5	73.1	99.1	46.8	24.3	5.4	0.26	0.23	77.6	82.9	73.2
18	77.1	87.1	69.8	28.5	84.7	99.7	59.2	20.9	5.5	0.62	0.19	78.4	82.3	75.1
19	77.8	86.3	71.3	28.8	87	99.9	64.7	21	5.7	0.04	0.18	79	82.8	75.9
20	79.8	88.9	70.4	29.6	82.4	99.2	54	24.6	9.3	0.54	0.24	80.2	83.7	77
21	73.5	79.9	68.4	24.2	75.2	99.4	42.8	21.7	9.8	0.31	0.21	77.7	79.6	76.3
22	71.1	80.1	60.9	20.5	64.2	93	32.3	28.7	6.4	0	0.24	76.6	80.9	72.8
23	70.4	82.2	56.7	19.5	65	96.8	36.1	29.6	4	0	0.23	76.1	81.3	71.3
24	75.7	87.8	63.3	25.6	73.7	96.5	48.5	25.6	6	0	0.23	77.1	81.7	72.4
25	79.2	86.8	72.9	29.9	78.6	97.1	52.1	20.3	6.6	0	0.2	78.9	81.9	76.4
26	78.9	89	68.1	28.5	67.7	97.7	40.4	27.4	4.8	0	0.25	79.3	83.7	75.2
27	81	91.8	68.2	30	66.2	99.1	38.2	28.3	3.9	0	0.25	80.4	85	76
28	80.3	93.2	68.2	30.7	73.1	97.1	44.6	23.8	3.5	0	0.22	81	84.7	77.4
29	79.4	92.4	71.7	32.1	79.7	98.7	47.2	23.8	5.4	0.05	0.23	81.6	86.3	78
30	79.1	89.2	70.2	29.7	68.5	97.8	37.6	26.8	7.6	0	0.27	81	84.4	78
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 July 2019.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	73.2	83.7	60.7	22.2	68	93.1	44.9	26.9	4	0	0.22	79.3	83	75.3
2	78	89.7	63.5	26.6	72	99.8	44.5	27.3	6.3	0	0.25	79.7	84.5	75
3	81.3	91.4	69.3	30.4	75.1	98.4	49.6	26.3	4.2	0	0.23	81.5	85.7	77.5
4	80.3	90.8	71.9	31.4	84.3	99.5	57.7	20.2	3.1	0	0.18	82	85.3	78.9
5	81.6	90.5	75	32.8	85.5	100	60.5	20.2	4.3	0.06	0.19	82.4	85.7	79.6
6	81.6	90.3	74.4	32.3	84.6	99.4	62.1	23.5	6.6	0.04	0.21	83	87.2	79.5
7	77.8	84.6	72.6	28.6	87.6	99.7	69	16.8	3.7	0	0.15	81.9	83.7	79.8
8	73.4	78.5	66.7	22.6	87.6	98.4	58.8	10.2	4.9	0.25	0.11	79.3	81.2	77.3
9	73.6	85.9	61.7	23.8	79.5	99.4	50.9	24.6	3.4	0	0.2	78.2	82.9	73.6
10	75.6	87.3	63.4	25.3	73.3	97	51.2	25.2	4.1	0	0.21	79.1	83.4	74.9
11	79	91	65.4	28.2	83.7	99.9	57.1	21.3	7	0.46	0.21	79.8	83.8	76.5
12	79.2	88.5	72.4	30.5	82.9	100	53.6	24.3	6	0	0.22	81.6	85.9	78.1
13	78.6	87.8	69.5	28.7	70.9	99.1	39.6	28	4.6	0	0.24	81.6	86	77.5
14	82.2	92.7	71.5	32.1	73.6	99.6	47.2	26.1	4.9	0	0.24	81.8	86.2	77.7
15	78.8	89	68.1	28.5	67.5	96.4	39.4	28	3.9	0	0.24	81.7	85.6	77.9
16	81.8	93.3	69.8	31.5	75.8	99.5	50.1	25.5	4.4	0	0.23	82	86.5	78.1
17	84.1	95.3	73.8	34.5	75.6	98.3	47	25.1	7.4	0.07	0.26	83.8	87.8	80.5
18	82.5	91	74.8	32.9	83.8	98.7	62.4	23.8	7.5	0.01	0.22	84.2	88	80.8
19	85.2	94.8	74.7	34.8	74.8	99.9	45.4	24.6	5.1	0	0.24	84.7	88.3	81.1
20	87.5	97	79.7	38.3	74.6	97.6	49.3	25.4	5.9	0	0.26	85.7	89.8	82.1
21	88.1	98.2	78.8	38.5	73.2	99.1	43.5	24.5	6.3	0	0.27	86.3	90.3	82.8
22	85.6	94.4	74.3	34.4	73	98.1	53.6	24.7	8.3	0.01	0.25	86.1	89.7	82.6
23	71.3	80.8	67.3	24	93.5	99.5	68.5	7.7	5.5	0.83	0.09	82.1	85.9	79
24	73	82	65.7	23.9	79.6	100	53.1	24.7	5.6	0.09	0.2	80.2	84.1	77.2
25	73.2	84.8	61.7	23.3	76.8	99.7	44.3	19.7	2.4	0	0.16	79.2	82.1	75.8
26	74.4	86.2	61.2	23.7	74	99.8	39.4	25.1	2.6	0	0.2	78.7	82.7	74.7
27	75.2	87.3	62.6	25	76	99.8	46.9	22.9	3.2	0	0.19	79.1	83.1	75.3
28	78.5	91.1	65.9	28.5	69.3	95.3	43.7	25.4	6.1	0	0.24	80	84.5	75.9
29	81.1	93.6	70.1	31.9	65.4	88.6	36	24.7	5.6	0	0.26	81.3	85.5	77.6
30	81.4	93.3	70.7	32	67.1	93.2	40	25.9	6.6	0	0.27	82.4	87	78.4
31	78	90.8	68	29.4	83.7	99.6	48.4	20.1	4.6	0.22	0.2	82.3	86.3	78.8
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 August 2019.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	76	89	65.9	27.5	86	99.9	51.8	21.2	3.5	0.72	0.19	81.6	86.2	78.6
2	73.8	81.8	69.2	25.5	94.1	100	69.7	10.9	2.3	0.6	0.1	78.9	81.1	77.5
3	77.1	86.1	68.4	27.3	84.6	100	60.3	23.8	2.8	0	0.19	79.9	83.9	76.4
4	77.7	87.4	69.2	28.3	86	100	59.4	20.4	3.7	0	0.18	80.9	84	78
5	77.1	87.6	71.4	29.5	87.6	99.9	53.4	15.4	2.3	0.02	0.14	80.8	83.2	78.6
6	77.3	87.3	71.4	29.3	84.9	99.8	58.1	20.4	4.1	0	0.18	81	83.8	78.6
7	78.1	89.2	69.9	29.6	86.6	99.5	60.4	20.1	7.6	0.29	0.19	81.1	84.3	78.8
8	77.7	88.3	67.3	27.8	79	100	46.3	22.2	4.4	0	0.2	80.4	84.1	77.1
9	77.3	87.9	69.9	28.9	78.5	99	47.2	19.5	3.3	0	0.18	80.5	83.5	77.8
10	73.5	81.7	63.2	22.5	68.5	97.1	42.7	19.8	4.7	0	0.18	78.6	80.7	76.2
11	73.2	84	61	22.5	68.2	97.6	37.6	24.9	3.1	0	0.2	77.6	81.4	74.1
12	74.4	86.8	59.2	23	74.6	99.8	49.1	21.4	4.4	0	0.19	77.2	80.7	73.4
13	77.1	84.3	71.1	27.7	88.7	99.4	70.4	10.2	6.4	0.61	0.11	77.9	79.5	76.2
14	78.7	88.3	72.3	30.3	90.4	100	67.6	16.8	4.7	0	0.15	79.8	82.8	77.4
15	74.6	81.6	69.5	25.5	90.4	100	72.3	14.9	4	0	0.12	79.3	81.5	77.2
16	77.1	86.4	69.4	27.9	89.3	100	68.4	17.8	4	0	0.15	79.6	82.8	77
17	78.8	89.5	72.9	31.2	89.6	100	66.1	16.9	3.2	0.46	0.15	80.5	83.2	78.1
18	80.6	89.7	74.4	32	85.7	100	58	18.1	4	0	0.17	81.2	84.5	78.7
19	80	95.3	73.7	34.5	88.8	100	48.9	17.4	4.4	0.57	0.19	81.6	85.2	79.3
20	78.7	89.5	72.8	31.2	87.8	100	52.3	12.9	2.7	0	0.13	81.1	83.2	79.2
21	78.8	89.1	71.4	30.3	85.3	98.2	55.7	18.9	7.2	0.02	0.19	80.9	83.6	78.7
22	80.8	91.2	70.9	31	78.8	100	48.2	20.8	5.7	0.18	0.21	81.5	84.7	78.6
23	71.6	80.4	64.3	22.4	90.2	99.8	72.8	9.1	5.7	0.62	0.09	79.7	82.1	77
24	68.4	76.3	62.3	19.3	79.1	98.9	50.1	16.2	5.1	0	0.14	76.6	78.6	75
25	66.7	75.7	56.6	16.1	82.5	98.2	56.7	18.4	8.5	0.06	0.15	74.4	77.1	71.8
26	68.6	73.6	62.7	18.1	82.9	97.3	66.2	11.9	7.9	0	0.11	74.6	76.1	73.3
27	69.1	76.4	60.1	18.3	89	99.5	72.7	12.1	4	0	0.1	73.9	76	71.6
28	75.2	82.7	68.6	25.7	84.9	99.6	62.2	12.7	4.7	0	0.12	75.9	78.2	73.9
29	72	82.7	61.5	22.1	72.9	98.7	35.4	22.5	6.5	0	0.21	76.2	79.1	73.8
30	73.2	87.5	58.4	22.9	69.5	99.3	34.5	21.6	4.9	0	0.2	74.6	78.1	71.2
31	73.8	85.6	64.7	25.1	82.1	98.5	58.5	20	4	0	0.16	75.6	79.1	72.5
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 B4. Weather data for the Georgetown REC site September 2019.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	72.9	80.4	65.6	23	82.9	98.9	62.7	19.5	4.8	0	0.15	75.8	78.7	73.1
2	77	88.8	66.3	27.6	78.9	100	42.4	19.8	5.2	0	0.19	76.5	80	73.4
3	74	83.6	66.6	25.1	84.2	100	53.3	20.1	4.5	0	0.17	77.5	80.6	74.9
4	78	88.5	66.9	27.7	82.9	100	58.9	18.6	7	0	0.18	77.4	80.5	74.7
5	73.3	77.4	70.4	23.9	85.1	98.5	70.5	8.5	7.1	0	0.09	77.2	78.5	76.2
6	67.1	70.8	61.7	16.2	93.9	98.9	87.6	1.4	13.6	N/A	0.04	74.1	76.2	72.1
7	67.2	79.6	55.8	17.7	80.2	98.7	47.2	19.7	4.5	N/A	0.15	72.7	76.4	69.4
8	70	83	59.1	21	80	100	46.3	16.8	2.7	N/A	0.14	73	76.2	69.8
9	72	83.6	62.7	23.1	83.1	99.6	52	15.9	3.3	N/A	0.13	74.1	77.3	71.5
10	71.8	83	60.8	21.9	81.6	99.9	50.5	19	4.2	N/A	0.15	74	77.1	71.1
11	76.2	88.8	64	26.4	81.4	99.9	56.1	19.1	6.2	N/A	0.18	74.8	78.3	71.7
12	80.3	93.6	71.3	32.5	78.3	99.9	44.5	17.2	6.1	N/A	0.19	77.3	80.6	74.7
13	69.1	72.5	60.5	16.5	75.7	92.3	62.6	9.8	7.2	N/A	0.1	75.9	78.1	73.7
14	70.5	82.5	57.8	20.2	83.1	98.4	59.2	12.7	4.6	N/A	0.12	73.4	76	70.9
15	74.4	82.3	65.2	23.7	91.1	100	73.6	8.9	3.4	N/A	0.08	75.1	77.1	73.7
16	73.2	87.3	62	24.7	79.8	100	41.4	16.2	2.3	0	0.14	74.8	77.9	72.1
17	69.1	78.4	55.3	16.9	75.3	99.1	46.2	17	4.5	0.05	0.14	74.7	76.6	72.6
18	61.9	71.9	51.7	11.8	73.8	95.9	50.2	17.6	5.1	0	0.13	71.2	73.6	68.6
19	58.8	69.4	48.6	9	70.5	95.8	45.6	17.5	4.7	0	0.12	69.8	72.7	67.3
20	59.9	76.7	41.2	8.9	71.2	98.4	35.1	22.5	3.4	0	0.15	68.8	73.5	64.5
21	68.1	85.5	50.8	18.1	74.8	99.4	36.2	21.8	3.6	0	0.17	70.3	75.4	65.8
22	74.2	88.6	61.9	25.3	74	99	40.9	20.2	5.4	0	0.19	72.8	77.4	68.9
23	77.6	88.9	68.5	28.7	68.7	90.7	39.5	20	9	0	0.23	74.9	78.4	71.9
24	72.3	79.9	56.9	18.4	62.7	88.3	36.6	20.8	6.3	0	0.18	75.2	77.8	73
25	65.5	80.5	52.8	16.7	65.6	94.9	30.7	20.7	2.9	0	0.14	72.6	76.7	68.8
26	73.8	87.6	61.2	24.4	70.6	94.2	38.2	18.4	7.3	0	0.2	73.2	77.2	69.9
27	68.2	79.2	56.3	17.8	73.2	97.4	47.5	15.7	4.1	0	0.13	73.3	75.9	70.4
28	73.2	84.7	60.8	22.8	82.1	97.2	63.1	13.4	5.4	0	0.12	73	76.3	70.1
29	73.5	82.1	65.8	23.9	80.1	99.2	52.7	18.2	5.4	0	0.15	74.7	77.9	72.3
30	68.1	73.8	63.1	18.5	75.7	95.9	54.1	8.2	4.2	0	0.09	73	74.5	71.8
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)		