1997 Cantaloupe Variety Trial

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Objective: To evaluate new eastern type cantaloupe varieties under Delaware growing conditions. Parameters to be evaluated include: yield, quality and maturity.

Location: Field 13A, University of Delaware Research & Education Center

Cultural Practices:

Planting Date: Greenhouse - April 15, 1997
Field - May 17, 1997

Fertilizer: 1500 lbs of 10-10-10 applied broadcast on May 8, 1997 before laying plastic.

Foliar application of FolCal at 1.5 pts./A applied on 7/14/97, 7/17/97, 7/21/97, 7/26/97, and 8/2/97.

Herbicide: Alanap at 1 gallon/A plus Prefar at 1 gallon /A applied pre-plant incorporated on May 9, 1997.
Poast applied at 1.5 pts/A + nonionic surfactant applied postemergence on June 20, 1997.

Fungicide: Bravo 720 at 2 pts./A + Benlate at 0.5 lbs./A every seven days beginning July 3, 1997 through August 2, 1997.

Insecticide: Lannate at 1.5 pts/A for cucumber beetle control applied 7/3/97.
Sevin at 1.25 lbs./A for cucumber beetle control applied 7/26/97.

Plot Design: One row plots, replicated three times using a randomized complete block design. Plants were planted on black plastic mulch with trickle irrigation using 10 plants per plot at 3' x 6' spacing.

Harvest: Began on July 21, 1997 and ended August 8, 1997. All melons were picked as they would be picked commercially. Each melon was weighed individually with soluble solids taken of each variety.

Results: Tables 1 - Yield Data
Table 2 - Melons Harvested Per Day

Comments:
The weather for the cantaloupe trial was cool, early in the spring and then turned hot and dry. The disease pressure was light, with moderate pressure from cucumber beetles. The plots looked good throughout the growing season until approximately one week before harvest, when we noticed some of the varieties were exhibiting tiny lesions the size of a pin hole surrounded by yellow halos. The lesions appeared first on the crown leaves and progressed down the runner to the newest growth. The newest growth did not exhibit signs. The lesions had watersoaked margins on the under surface of the leaf. As they matured, the lesions became necrotic (turned brown). I had never seen this before on melons and had the plots examined by our plant pathologist. Diseases were ruled out. Results of tissue analysis and pH levels confirmed manganese toxicity. We think an error was made in the results for this field. The pH reading was 6.0 in the fall of 1996. However, the troubleshooting pH readings were 4.7 in the good sample (areas of the plots that still looked relatively unaffected at the time the sample was taken) and 4.5 in the bad areas (areas of the plot that were the most severely affected). Two samples from the good and bad areas were sent to A & L Laboratories for analysis on July 14, 1997. The manganese levels in the good areas were 1550 ppm and 1920 ppm. Normal levels range from 50-250 ppm. The bad area samples results were 3080 ppm and 2070 ppm. The literature states that excess soil acidity allows elemental manganese that is normally bound to soil particles to be released and taken up into the plant in very high (toxic) concentrations. Losses to manganese toxicity can be severe, especially in muskmelon crops. Hydrated lime has been spread over fields that had been affected by this conditions, but have not always had satisfactory results. We originally thought we would not be able to collect any data for the trial from the plots. We decide to apply a foliar application of calcium nitrate to the plots in an attempt to maintain the tissue that had been affected by the manganese toxicity and to prevent (if possible), or lessen the effects of the toxicity on the new growth. We were successful in maintaining the foliage through the harvest with the foliar calcium nitrate. I feel yields were affected on some plots that were not able to benefit as much from the calcium nitrate due to the stage of severity of the toxicity when we began the foliar sprays of calcium nitrate. I did rate the plots for the severity of the toxicity on July 9, 1997, and the rates are included in the results. Some varieties seemed to be affected more severely by the toxicity than others, but whether this is due to location in the field or if there is a possible varietal response is unclear.

Table 1. 1997 University of Delaware Cantaloupe Variety Trial Harvest Data.

Variety	Trt	Seed Source	Date of First Pick	Date of Last Pick	# melons /plot	# melons /Acre	(lbs.)			Avg. S.S.
							Avg. Wt.	Wt. of Largest	Wt. of Smallest	
StarFire	1	Harris Seeds	7/28/97	8/8/97	33.5	8107.0	4.5	7.8	3.1	6.9
ML 4824	9	Rogers	7/21/97	8/4/97	33.5	8107.0	4.3	7.6	2.4	8.9
HMX 0586	3	Harris Seeds	7/25/97	8/4/97	32.0	7744.0	4.7	7.5	2.6	7.1
HMX 2608	12	Harris Moran	7/28/97	8/8/97	30.0	7260.0	4.7	7.8	1.8	7.0
Superstar	8	Harris Moran	7/25/97	8/8/97	29.5	7139.0	6.2	8.9	2.9	7.9
ML 5277	6	Rogers	7/21/97	8/6/97	28.5	6897.0	5.5	8.6	3.1	8.5
Sugar Bowl	5	Ferry Morse	7/25/97	8/8/97	25.5	6171.0	6.8	10.9	2.8	12.0
ML 5292	2	Rogers	7/28/97	8/8/97	24.5	5929.0	7.5	10.6	2.1	9.1
Quasar	11	Petoseed	7/31/97	8/8/97	24.5	5929.0	7.2	11.9	2.4	7.6
Athena	13	Rogers	7/25/97	8/8/97	24.0	5808.0	5.3	9.4	3.5	9.6
Star Sweet	10	Harris Seeds	7/28/97	8/8/97	23.5	5687.0	3.4	6.0	2.1	5.7
ML 5911	4	Rogers	7/25/97	8/8/97	18.5	4477.0	7.8	11.7	5.1	8.5
Eclipse	7	Petoseed	7/29/97	8/8/97	14.5	3509.0	5.8	9.1	3.5	10.3
				LSD 0.05	8.0	1940.5	1.9			

Table 2. Number of Melons Harvested Per Day for the 1997 University of Delaware Cantaloupe Variety Trial
Harvest: Melons/Day (From 30 plants)

Variety	Trt	7/21/97	7/22/97	7/25/97	7/28/97	7/29/97	7/30/97	7/31/97	8/1/97	8/4/97	8/6/97	8/8/97
StarFire	1	1			8	3	6	9	19	18		5
ML 5292	2			2	6	3		7	10	29	4	6
HMX 0586	3			1	27	35	12	5	9	12	2	
ML 5911	4			2	10	4	8	1	8	16	1	2
Sugar Bowl	5			1	9	1	1	4	9	27	4	13
ML 5277	6	6		12	24	5	11	9	7	6	1	
Eclipse	7				2	17	8	5	1	6		7
Superstar	8	3	2	4	26	10	6	1	4	6		2
ML 4824	9	1	2	7	17	10	10	10	15	10		5
Star Sweet	10				14	16	13	2		11		2
Quasar	11							2	17	41	5	3
HMX 2608	12			3	12	2	6	4	27	33	1	3
Athena	13			9	2	4	11	8	4	25	5	6

Manganese Toxicity Rating for 1997 Cantaloupe Variety Trial

Date of Rating: July 9, 1997

Rating Scale: 1= worst
5= best, not affected

General plant descriptions at the time of rating:

1= Crown leaves are necrotic; toxicity is affecting other leaves; new growth on the tips of runners are not showing symptoms yet; fruit is not going to finish maturing, doesn't look like there is enough green tissue to support the fruit to maturity; still have nice flowers on the end of runners.

3= Crown leaves are definitely affected, they are yellowing and showing some signs of necrosis; a decline in crown leaves us visible from a distance; Runners are still green, but the older leaves on the runners are starting to show symptoms of toxicity, they have not progressed as much as crown leaves; New growth looks o.k.

4= Very similar to the rating of 3, but crown leaves are just starting to yellow and very little necrosis on the crown leaves. All other tissue looks good.

Trt	Variety	Rating		
		Rep 1	Rep 2	Rep 3
1	Star Fire (HMX 2608)	2	4	3
2	ML 5292	4	4	4
3	HMX 0586	4	4	3
4	ML 5911	4	3	4
5	Sugar Bowl (FMX 219)	4	4	4
6	ML 5277	4	4	3
7	Eclipse	2	3	3
8	Superstar	1	4	2
9	ML 4824	4	4	4
10	Star Sweet	2	1	1
11	Quasar	4	3	4
12	HMX 2608	3	3	4
13	Athena	4	4	4

Appendix A

Station	County	State	Date (Month & yr.)	Time of Complete Observation (Local time)	Standard Time in Use
Georgetown	Sussex	DE	05/97	8:00 a.m.	DST

RECORD OF EVAPORATION AND CLIMATOLOGICAL OBSERVATIONS

DATE	AIR TEMPERATURE °F: 24 Hours Ending at Observation Max.	24 Hours Ending at Observation Min.	At Observation Dry-bulb	At Observation Wet bulb	At Observation Dew Point	Supplemental Readings at ____ Dry-bulb	Supplemental Readings at ____ Wet bulb	Supplemental Readings at ____ Dew Point	PRECIPITATION: Time of beginning	Time of ending	Time of beginning	Time of ending	24 Hour Amounts: Rain, Melted snow, etc. (in. & hundredths)	24 Hour Amounts: Snow, Ice Pellets, Hail (in. & tenths)	At Obsn. Snow, Ice Pellets, Hail, Ice on ground (in.)	WIND: Anemometer Dial Reading (Miles)	WIND: 24 Hour Movement	EVAPORATION (Inches & hundredths): Gage Reading or Amount Added +	Reading When Tank Filled or Amount Removed −	Amount of Evaporation	WATER TEMP. °F: 24 Hours Ending at Observation Max.	WATER TEMP. °F: 24 Hours Ending at Observation Min.	ADDITIONAL DATA/REMARKS
1	74	45		57														4.58			69	47	
2	72	47		51									.11					4.39			70	44	
3	69	50		60														4.04			70	50	
4	73	51		53									.24					4.16			60	48	
5	65	38		50														3.97			65	43	
6	68	50		56														3.63			72	50	
7	72	43		48									.15					3.55			70	43	
8	65	34		47														3.24			68	44	
9	68	47		60									.06					3.14			72	52	
10	75	47		52									.61					3.58			70	48	
11	60	44		51														3.40			58	46	
12	69	51		58														3.15			70	48	
13	71	58		60														2.81			74	53	
14	63	40		49														2.71			58	45	
15	70	49		60									.04					2.59			73	52	
16	71	41		51									.03					2.37			70	48	
17	65	40		44														2.15			65	45	
18	72	41		54														1.86			68	48	
19	71	54		69														1.59			73	63	
20	90	68		72														1.21			80	62	
21	74	49		55														1.01			71	53	
22	68	44		52														.08			71	49	
23	65	43		58														4.82			70	58	Refilled
24	71	50		54														4.42			75	50	
25	81	54		71														4.15			80	59	
26	80	58		58									1.24					5.2			70	57	
27	63	47		57									.08					5.2			60	53	
28	62	40		53														4.94			67	57	
29	68	39		52														4.69			72	50	
30	66	52		57														4.46			75	54	
31	71	56		62									.01					4.28			71	59	
Sum													2.57										
Avg.	70	47										Greatest						Adjusted Total					

WS FORM E-22 (4-78)

U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL WEATHER SERVICE

OBSERVER Victor Green

STATION NUMBER

Station	County	State	Date (Month & yr.)	Time of Complete Observation (Local time)	Standard Time in Use
Georgetown	Sussex	DE	06/97	8:00 a.m.	DST

RECORD OF EVAPORATION AND CLIMATOLOGICAL OBSERVATIONS

DATE	AIR TEMPERATURE °F: 24 Hours Ending at Observation Max.	24 Hours Ending at Observation Min.	At Observation Dry-bulb	At Observation Wet bulb	At Observation Dew Point	Supplemental Readings at ____ Dry-bulb	Supplemental Readings at ____ Wet bulb	Supplemental Readings at ____ Dew Point	PRECIPITATION: Time of beginning	Time of ending	Time of beginning	Time of ending	24 Hour Amounts: Rain, Melted snow, etc. (in. & hundredths)	24 Hour Amounts: Snow, Ice Pellets, Hail (in. & tenths)	At Obsn. Snow, Ice Pellets, Hail, Ice on ground (in.)	WIND: Anemometer Dial Reading (Miles)	WIND: 24 Hour Movement	EVAPORATION (Inches & hundredths): Gage Reading or Amount Added +	Reading When Tank Filled or Amount Removed −	Amount of Evaporation	WATER TEMP. °F: 24 Hours Ending at Observation Max.	WATER TEMP. °F: 24 Hours Ending at Observation Min.	ADDITIONAL DATA/REMARKS
1	70	60		61									.01								68	60	
2	72	57		57									.02								70	57	
3	60	51		51									.37								57	50	
4	56	49		54									.10								54	49	
5	63	42		54																	62	49	
6	71	47		53																	74	51	
7	65	52		55																	70	51	
8	59	42		58																	55	52	
9	65	42		55																	71	62	
10	79	53		60																	78	54	
11	87	57		65																	80	58	
12	87	65		67																	80	61	
13	86	67		72																	82	65	
14	83	66		70																	76	63	
15	78	58		64									.15								72	57	
16	72	45		58																	77	55	
17	79	52		64																	82	59	
18	87	65		72																	80	64	
19	90	68		74									1.12								80	67	
20	83	60		74																	76	66	
21	89	65		68																	85	65	
22	93	68		76																	85	69	
23	94	68		73									.41								88	68	
24	90	62		71																	83	65	
25	93	71		73																	88	68	
26	96	74		81																	88	72	
27	96	67		70									.68								89	68	
28	85	59		67																	83	63	
29	85	57		74																	86	68	
30	86	58		62																	85	64	
31																							
Sum													2.86										
Avg.	80	58										Greatest						Adjusted Total					

WS FORM E-22 (4-78)

U.S. DEPARTMENT OF COMMERCE NOAA

OBSERVER: Victor Green

STATION NUMBER

Delaware Cooperative Extension

Making a difference

July 1997 Daily Weather Summary

Research and Education Center, Univ. of Del., Georgetown. DE

DATE	Julian Day	Min. Temp (C)	Time Min Temp	Min RH	Max Temp (C)	Time Max Temp	Max RH	Ave. Wind (m/sec)	Wind Dir	Total Solar	Net Solar	Rain (mm)	Min 2" Soil Temp	Max 2" Soil Temp
1	182	14.84	346	53.19	28.88	1340	92.7	1.531	40.69	345.8		0	20.37	26.11
2	183	18.74	313	58.9	27.35	1349	93.2	1.411	25.55	335.5		0	21.92	26.32
3	184	20.06	506	80.3	26.13	1746	99.4	1.371	37.28	174.3		10.92	22.7	25.26
4	185	21.89	500	63	32.93	1335	96	2.98	27.47	410		0	23.01	27.98
5	186	19.98	448	39.16	32.84	1308	95	2.328	36.03	420.5		0.762	22.91	26.14
6	187	17.24	2358	45.36	26.96	1519	89.3	1.548	74	265.9		0.254	21.48	24.79
7	188	15.31	522	48.03	29.02	1324	95.6	1.282	39.85	348.4		0	20.03	24.93
8	189	18.05	416	56.6	30.74	1505	94.2	0.942	86	321.5		0	21.2	26.07
9	190	16.46	424	42.25	31.32	1422	100.1	1.394	58.46	372.2		0	20.64	26.47
10	191	20.09	0	45.41	33.13	1500	97.6	2.811	34.16	347.2		6.858	22.13	27.84
11	192	16.27	2342	59.15	26.32	1616	95.8	1.77	64.1	254.2		0.762	14.56	41.59
12	193	13.9	451	47.2	28.71	1400	98.6	0.955	95.9	375.4		0	12.71	44.61
13	194	14.23	453	40.4	30.71	1601	98.5	1.297	68.24	404.6		0	12.74	41.82
14	195	19.43	519	41.5	33.65	1548	92.6	1.925	34.59	432.3		0	17.6	46.14
15	196	20.94	431	45.6	34.28	1437	91	1.698	44.11	395.7		0	19.8	45.11
16	197	22.14	506	41.21	35.94	1401	94.1	2.147	32.69	412.6		0	14	32
17	198	23.33	1625	52.54	35.74	1425	97.5	1.631	51.04	314.8		13.97	21	21
18	199	22.26	507	51.37	33.23	1545	96.4	2.15	35.29	356.4		10.16	20	22.5
19	200	21.97	2321	43.83	34.54	1604	95.1	2.826	32.81	414.1		11.43	21	29.5
20	201	19.93	0	47.41	31.83	1556	99.3	1.693	68.99	412.1		0	19	29
21	202	17.77	2359	56.7	25.95	1520	94.7	2.218	56.46	415		0	20	27
22	203	17.8	1	60.86	32.07	1443	94.8	1.679	54.3	305.1		0	22	27
23	204	19.99	0	74.7	26.18	1415	97.5	1.974	67.96	220.3		5.842	20.5	25
24	205	19.9	28	86.2	22.49	1005	96.6	1.668	26.18	52.26		5.08	20.7	26.5
25	206	16.8	0	91.3	23.05	1049	99.4	2.485	57.01	47.86		17.02	17.83	25.52
26	207	16.22	111	68.04	26.38	1630	94.8	2.061	58.86	261.5		0	17.25	40.53
27	208	16.73	533	58.11	29.76	1518	100.7	1.461	52.51	357.3		0	17.23	41.98
28	209	20.99	533	61.62	32.96	1337	96.9	2.225	21.68	365.1		0	22.28	45.38
29	210	23.47	2150	47.33	33.16	1505	99.3	2.204	43.66	399.6		0	24.94	47.82
30	211	18.49	2359	46.11	28.75	1430	94.7	2.445	31.69	372.6		0	19.8	55.1
31	212	14.94	2358	53.81	25.23	1646	89.8	31.88				0	21	27

Last Updated on 8/4/97
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Delaware Cooperative Extension

Making a difference

August 1997 Weather Summary

Research and Education Center, Georgetown, DE

	Julian Day	Min. Temp	Time Min. Temp	Max Temp	Time Max Temp	Min RH%	Time Min RH	Max RH%	Time Max RH	Ave. Wind (m/s)	Wind Dir	Total Solar	Net solar	Rain mm	Rain Inches	Max Wind (m/s)
1	213	18.54	0	30.04	1514	38.75	1519	76.4	2357	1.88		238.8	191	0.00	0.00	
2	214	14.6	453	31.25	1455	42.18	1403	94.4	609	1.68		420.7	336.6	0.00	0.00	
3	215	19.11	218	29.64	1452	56.61	1555	89.8	608	1.74		210.9	168.7	0.00	0.00	1.74
4	216	17.9	529	31.88	1503	52	1500	95.6	622	1.73		336.7	269.4	0.00	0.00	1.73
5	217	19.22	2312	29.95	1356	52.9	1222	95.8	2347	1.26	299.6	258.1	206.5	0.00	0.00	5.00
6	218	16.17	0	27.52	1555	50.51	1350	96.4	519	1.79	188.9	303.4	242.7	4.83	0.19	7.05
7	219	15.08	530	25.75	1404	49.42	1638	96.4	638	1.41	234.1	353.2	282.5	0.00	0.00	5.11
8	220	13.88	552	26.56	1324	47.35	1324	96.3	735	0.77	342.3	291.4	233.1	0.00	0.00	3.21
9	221	14.05	520	29.78	1535	34.49	1623	96.6	644	1.27	68.05	366.9	293.5	0.00	0.00	4.58
10	222	14.39	517	30.68	1410	38.69	1228	100.1	701	1.60	48.86	400.9	320.7	0.00	0.00	4.78
11	223	17.62	0	29.48	1455	51.62	1251	92.2	2348	1.82	12.76	316.2	253	0.00	0.00	5.24
12	224	15.03	509	30.05	1353	53.58	1311	100.1	658	1.29	343.1	347.2	277.7	0.00	0.00	4.04
13	225	20.23	537	30.38	1237	67.33	1249	98.2	700	1.24	304.2	258.5	206.8	0.00	0.00	4.17
14	226	21.27	19	33.38	1306	55.64	1308	98.6	159	2.54	33.99	269.2	215.4	9.40	0.37	7.75
15	227	19.59	2341	26.02	1520	81.2	1106	99.4	638	1.37	228.5	150.1	120.1	0.51	0.02	4.31
16	228	19.39	8	31.49	1611	63.4	1613	98.7	715	1.73	349.4	325.6	260.4	0.00	0.00	4.56
17	229	24.56	548	35.49	1426	53.91	1538	99.6	619	2.40	49.16	379.5	303.6	0.00	0.00	5.10
18	230	22.89	0	35.62	1443	51.31	1314	94.4	507	2.81	71.8	353.4	282.7	0.51	0.02	8.40
19	231	15.39	2358	26.6	1103	81.3	1105	99.6	627	1.92	131.3	114.6	91.7	1.27	0.05	7.46
20	232	14.19	443	26.55	1513	53.11	1543	94.8	134	1.24	188.6	303.5	242.8	0.00	0.00	4.04
21	233	16.67	109	23.91	2205	90.8	608	97.7	1441	2.46	337	32.6	26.08	31.75	1.25	7.93
22	234	20.84	617	27.77	1645	60.12	1632	98.2	159	2.70	92	346.9	277.5	0.51	0.02	6.33
23	235	15.51	0	26.94	1443	52.3	1408	97.9	627	1.84	123.4	371.5	297.2	0.00	0.00	4.72
24	236	12.05	431	25.04	1438	54.85	1440	90.5	625	1.85	90.7	323.4	258.8	0.00	0.00	6.01
25	237	11.41	542	26.54	1525	42.27	1402	99.2	705	1.06	76.8	388.3	310.6	0.00	0.00	4.45
26	238	12.39	612	26.76	1312	48.12	1050	96.6	657	0.93	306.3	367	293.6	0.00	0.00	4.73
27	239	12.26	556	26.52	1310	46.79	1511	99.2	732	1.02	292.4	364.4	291.6	0.00	0.00	3.27
28	240	12.29	534	28.42	1420	55.4	1106	100.3	727	1.22	335.3	353.9	283.1	0.00	0.00	4.62
29	241	14.87	312	28.54	1531	63.69	1517	99	726	1.11	23.25	207.9	166.3	0.00	0.00	5.00
30	242	16.13	2310	26.73	1424	51.89	1609	99.5	704	2.00	141.5	342.1	273.6	0.00	0.00	5.93

31	243	14	550	27.68	1435	49.6	1448	95.2	634	1.52	161.6	362.1	289.7	0.00	0.00	4.17
TOTAL														48.77	1.92	
AVERAGE		16.50 C		28.81 C		54.55%		96.35%		1.65			244.10			5.01
		61.70 F		83.85 F												

Last Updated on 9/2/97
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