

NEW YORK STATE 2012 PROCESSING PEA CULTIVAR TRIAL REPORT

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PROCEDURE AND MATERIALS

Location: NYS Agricultural Research Farm, Geneva - soil type - silt loam. **Tillage** - Conventional. **Fertilizer:** broadcast 400 lb/A of 8-14-21 and worked in. **Planter** - Modified Hege 80 (cone type). **Planting Date** - 5/7. Picking started on 6/27 and we finished on 7/11. **Herbicide** - Dual with a bit of Roundup post plant. **Plot Size:** 7 rows by 30 ft. **Row Width:** 6 inches, Row length: 30 ft. **In-row Spacing:** 1350 seeds were placed in the cone for the 30 ft plot - theoretically this is 6.4 seeds per foot or 557,568 seeds per acre. Our processor has asked us to shoot for 550,000 seeds per acre). **Insecticide** - none. **Experimental Design** - Randomized split block design, 4 replications (3 replications were harvested and another was left for demonstration). **Model TG4EI Integrating Texturegagage** - measure for maturity.

The objective of this trial was to compare a number of normal leaf and afila type pea varieties for yield and other quality characteristics. This was accomplished in cooperation with the pea processor in New York in an attempt to find new, higher quality, and disease resistant varieties that are adapted to our climate and soil conditions. Evaluation of processed product was held on 11/8 for processing and seed company representatives.

Yield of seven rows by 7.5 feet per replication (26.25 square feet) was obtained by pulling the plants and hand picking the pods. Two harvests were made if possible to plot yield increase and also tenderometer reading increase. A target tenderometer value of 100 was used for the final harvest. A stationary sheller was used to remove berries from the harvested pods. Tenderometer readings were taken on each replication and averaged for the report. Pea berries were hand sieved with Seedburo hand testing screens. See following table for details.

Table 1. Sieve size diameters.

Sieve Size	Diameter of circular Opening in MM (inches) Will not pass through	Will pass through
1	6.35 (16/64)	7.1 (18/64)
2	7.1 (18/64)	7.9 (20/64)
3	7.9 (20/64)	8.7 (22/64)
4	8.7 (22/64)	9.5 (24/64)
5	9.5 (24/64)	10.3 (26/64)
6	10.3 (26/64)	11.1 (28/64)

Temperature and moisture Conditions

Soil conditions were on the wet side when planting and it rained the next day and crusted the soil. A crust buster was used to go over the plots prior to emergence to enhance emergence. Stands were thinner than optimum but still decent in most cases. We harvested only three reps and five were planted which helped to find three uniform plots. Growing conditions were good other than dry and hot for some of latest cultivars. I did irrigate on 7/3. The latest cultivars could have used one more irrigation. Yields reflected the plant stands, drought stress and temperatures. There is some thought that afila types are hurt worst in hot, dry weather because they do not shade the ground which helps retain moisture. See the weather insert at the end of the summary for a breakdown of temperatures and precipitation over the growing season. Please direct any questions to the following mailing address, phone number or email address.

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Table 2 - Cultivar List and Maturity From Seed Source

cultivar	HU	Seed Source	leaf type	seed tmt	seed count/lb	germ. %	sieve size	nodes to flower
PLS90004	1100	PureLine	afila	captan	2215	na		
Strike	1140	PureLine	normal	captan	2256	99		9
Salinero	1155	Seminis	normal	alleg &cap.	2315	95	3.4	9 to 10
PLS14	1160	PureLine	normal	captan	2220	na		
Pizarro	1170	Seminis	afila	alleg &cap.	2304	95	3.5	10
FP2269	1200	GV	afila	Maxim, ApronXL/Cr	1876	na	3.9	10
Uno (FP2292)	1200	GV	normal	Maxim, ApronXL/Cr	2707	na	3.7	10
BSC 2030	1220	Br.	normal	Cap/alleg/Cr	2272	97		9 to 10
Crescendo	1230	Seminis	normal	alleg &cap.	3009	95	2.5	10 to 11
EF680	1230	GV	normal	Maxim, ApronXL/Cr	2253	na	4	10
EX 08250826 (PA0826)	1250	Seminis	normal	alleg &cap.	3570	95	2.7	
Austin (FP2311)	1280	GV	afila	Maxim, ApronXL/Cr	2249	na	3.2	12
Sienna	1300	Br.	normal	Cap/alleg/Cr	1979	94	3.8	10 to 11
CS416	1320	Crites	afila	Maxim, ApronXL/Cr	2223	97	3.9	
Lii'Mo	1320	Seminis	normal	alleg &cap.	3888	95	2.6	10 to 11
EX 08570935	1340	Seminis	det afila	alleg &cap.	2599	95	3.1	12
BSC5760	1360	Br.	normal	Cap/alleg/Cr	2448	94		12
PLS 304	1370	PureLine	afila	captan	2419	na		
CS 424	1390	Crites	normal	Maxim, ApronXL/Cr	2363	98	3.9	
PLS 167	1400	PureLine	afila	captan	2957	na	3.1	
Reliance	1420	Seminis	det afila	alleg &cap.	2541	95	3.2	14
New PLS 560	1430	PureLine	afila	captan	3059	99	3.7	15
BSC4551	1430	Br.	normal	Cap/alleg/Cr	2439	90		13
EXPO2708	1440	Crites	afila	Maxim, ApronXL/Cr	2118	95	3.85	
BSC5091	1450	Br.	normal	Cap/alleg/Cr	2520	90		14
Spartan	1460	Br.	afila	Cap/alleg/Cr	2411	95		13-14
(EX 08540794) Sw. Savor DA1470	1470	Seminis	det afila	alleg &cap.	3274	92	3.2	12 to 13
PLS 134	1480	PureLine	afila	captan	2420	96	3.6	14
Ashton	1480	Seminis	normal	alleg &cap.	2521	91	3.3	14-15
BSC 5697	1480	Br.	afila	Cap/alleg/Cr	3131	97		14-15
CS426	1520	Crites	afila	Maxim, ApronXL/Cr	2345	98	3.8	
EX 08240782	1525	Seminis	normal	alleg &cap.	5314	90	2.4	
EX 08260893	1525	Seminis	normal	alleg &cap.	2359	95	3.5	14
Grundy	1560	GV	normal	Maxim, ApronXL/Cr	2616	na	3.8	16
Tamarac (CS401AF)	1570	Crites	afila	Maxim, ApronXL/Cr	1964	96	3.95	
XP 08250833 (Hyperion)	1575	Seminis	afila	alleg &cap.	2673	91	3.1	16
Mundial	1600	Seminis	normal	alleg &cap.	2639	94	3.25	15-16
PLS196	1600	PureLine	afila	captan	2019	90	3.7	
XP 08250838 (Maurice)	1650	Seminis	afila	alleg &cap.	3059	98	3.1	17
EX 08560906 (Prometheus)	1650	Seminis	normal	alleg &cap.	2679	95	3.4	16

Table 3. Plant Characteristics

Cultivar	Plant Stand Rating	Plant Vigor Rating	Canopy Height (in.)	Plant Habit Rating (at Harvest)	¹ Root Rot Rating
PLS90004	3	3	13.5	3	8.5
Salinero	3	4	12	2.3	6.8
Strike	3	4	11	2	7.0
Pizarro	3	4	13.5	3	7.8
EX08250826	3	3	12	2.3	6.0
FP2269	3	3.4	13.3	2.8	6.5
Uno	2.4	3	11.2	2.5	6.8
EF680	2.6	3	12	2.3	7.8
Crescendo	3	3.4	16.5	3.7	8.0
CS416	4	3	16.5	4	6.8
Austin	2.6	3	15	3.8	6.3
PLS14	3	3	14	3.7	6.8
PLS304	3	3	13	3	8.3
Lil Mo	3	3	15.5	3.5	7.8
CS424	3	3	11.5	2.5	7.0
EXPO2708	3	3	11	3.2	5.0
PLS167	3	3	12.5	3.2	8.3
Reliance	3	3	18	4.5	7.8
Sienna	3.4	3	10.5	2.8	8.0
EX08570935	3	3	16	3.8	5.8
BSC5091	3	3	12	3.2	3.3
BSC4551	3	3	10	2.8	4.8
PLS560	2.6	2.4	12	3.2	6.3
BSC5760	3.4	2.6	12.5	3.2	6.0
BSC2030	3	3	12.7	3.5	7.3
Spartan	3	3	13.5	3.5	6.0
CS426	3	3	12.5	3.4	5.0
BSC5697	2.6	2.4	12.5	3.4	3.3
Ashton	3	3	11	3	5.0
Sw. Savor DA1470	2.4	2.2	17	4.2	6.5
PLS134	3	2.6	11.5	3.2	3.8
Tamarac	3.4	3	12.5	3.4	7.5
Grundy	3	2.2	10	3	3.5
PLS196	3	3	12.5	3.5	6.8
EX08260893	3	3	12.5	3.4	5.8
EX08240782	1	1	not	harvested	6.3
Hyperion	3	2.4	19.5	4.4	6.0
Mundial	3	2.4	10.5	3	3.0
Prometheus	3	3	12	3.4	6.3
Maurice	3	2	18	4.4	5.8

Stand Rating –A rating of the plant stand a few weeks after planting. 1= poor, 5=excellent

Plant Vigor – A rating of plant growth a few weeks after planting. 1=poor, 5 = excellent

Canopy Height – Measurement in inches of the canopy height from the ground shortly before harvest.

Plant Habit – Rating of how well the plants stood at harvest. 1= flat on the ground, 5 very erect

¹ Root Rot Rating - Rating done by Dr. George Abawi. 1=healthy, 9=severe decay.

Table 4. Maturity Sieve Distribution and Yield - Early Season Cultivars

Cultivar	Days to harv	Heat Units to Harv.	Adjusted Heat U based on 100 TU	Sieve 1 %	Sieve 2 %	Sieve 3 %	Sieve 4 %	Sieve 5%	Sieve 6 %	Sieve size index	Ten.	#/A	Adjusted Yield based on 100 TU	Plants per A (1000)	Plts. per foot
PLS90004	51	1292	1237	2	4	11	28	43	12	4.4	127	4755	3990	391	4.5
Salinero	51	1292	1237	2	5	11	31	40	10	4.3	128	5227	4453	439	5.0
Strike	51	1292	1253	2	4	12	35	42	6	4.3	119	4937	4395	435	5.0
Pizarro	51	1292	1243	2	5	11	30	41	11	4.4	125	4538	3847	434	5.0
EX 08250826	52	1318	1285	6	20	41	26	4	0	3.0	116	4026	3568	436	5.0
EX 08250826	53	1345	1258	4	11	32	38	10	1	3.4	143	5013	3800	404	4.6
FP2269	51	1292	1303	1	3	11	33	39	12	4.4	94	4901	5059	431	4.9
FP2269	52	1318	1300	1	3	8	22	49	15	4.6	109	4904	4652	399	4.6
Uno (FP2292)	51	1292	1301	4	6	16	35	29	4	4.0	96	3848	3969	376	4.3
Uno (FP2292)	52	1318	1299	2	5	14	33	40	5	4.2	110	4153	3882	357	4.1
EF680	52	1318	1297	1	2	6	14	32	33	5.0	110	3997	3707	392	4.5
EF680	53	1345	1296	1	2	4	7	25	39	5.2	124	4748	4067	357	4.1
Crescendo	52	1318	1329	9	24	37	21	4	0	2.9	95	3851	4001	417	4.8
Crescendo	53	1345	1323	5	13	34	35	9	1	3.3	111	5343	5035	411	4.7
CS416	52	1318	1335	7	19	30	31	11	0	3.2	92	4200	4433	481	5.5
CS416	53	1345	1342	3	9	23	34	26	4	3.8	101	5165	5128	460	5.3
CS416	54	1381	1345	1	4	12	29	41	12	4.4	118	5924	5420	453	5.2
Austin	53	1345	1329	2	4	10	22	49	13	4.5	108	4066	3842	368	4.2
PLS14	52	1318	1354	4	12	32	38	12	0	3.4	82	4719	5223	407	4.7
PLS14	53	1345	1348	5	5	17	42	28	2	3.9	98	5906	5953	497	5.7
PLS14	54	1381	1364	1	3	10	32	46	9	4.5	108	5521	5288	414	4.8
PLS 304	54	1381	1382	2	8	20	36	28	3	3.9	100	4930	4939	461	5.3
PLS 304	55	1417	1350	1	3	11	30	50	4	4.4	133	5463	4530	479	5.5
Lil'Mo	54	1381	1387	6	13	30	33	14	1	3.4	97	4567	4651	386	4.4
Lil'Mo	55	1417	1360	3	8	20	52	14	2	3.7	128	5891	5098	405	4.6

Table 4. Maturity Sieve Distribution and Yield - Midseason Cultivars

Cultivar	Days to harv	Heat Units to Harv.	Adjusted Heat U based on 100 TU	Sieve 1 %	Sieve 2 %	Sieve 3 %	Sieve 4 %	Sieve 5%	Sieve 6 %	Sieve size index	Ten.	#/A	Adjusted Yield based on 100 TU	Plants per A (1000)	Plts. per foot
CS424	54	1381	1420	3	7	18	36	30	6	4.0	81	5260	5801	432	5.0
CS424	55	1417	1415	1	3	11	33	45	6	4.4	101	5579	5551	420	4.8
CS 424	56	1455	1409	1	3	9	23	50	13	4.6	123	6694	6050	421	4.8
EXPO2708	56	1455	1427	2	4	9	23	50	10	4.5	114	6106	5714	402	4.6
EXPO2708	57	1488	1407	1	2	7	23	49	17	4.7	140	7409	6279	462	5.3
PLS 167	56	1455	1440	6	17	41	29	4	0	3.1	107	4498	4292	409	4.7
PLS 167	57	1488	1462	4	13	31	42	6	0	3.3	113	4839	4475	478	5.5
Reliance	56	1455	1445	4	8	25	41	18	2	3.7	105	3184	3044	405	4.6
Reliance	57	1488	1459	3	5	14	36	34	5	4.1	115	3078	2668	330	3.8
Sienna	56	1455	1450	1	3	9	26	46	12	4.5	102	6000	5935	417	4.8
Sienna	57	1488	1420	1	2	7	23	40	24	4.7	134	7282	6330	378	4.3
EX 08570935	55	1417	1424	6	16	34	33	10	1	3.3	96	2711	2814	412	4.7
EX 08570935	56	1455	1458	3	9	27	39	19	2	3.7	98	3510	3557	405	4.6
EX 08570935	57	1488	1448	2	5	18	36	34	4	4.1	120	4113	3553	430	4.9
BSC5091	56	1455	1460	4	12	22	29	27	3	3.7	98	4755	4821	401	4.6
BSC5091	57	1488	1466	3	7	19	32	30	6	4.0	111	5343	5035	389	4.5
BSC4551	56	1455	1464	2	6	15	25	38	11	4.3	95	4886	5017	376	4.3
BSC4551	57	1488	1463	1	4	10	23	39	21	4.6	113	6262	5907	414	4.8
New PLS 560	57	1488	1483	9	13	22	35	17	1	3.4	103	3354	3279	310	3.6
New PLS 560	58	1520	1504	4	10	24	34	24	2	3.7	108	4425	4201	373	4.3

Table 4. Continued (Midseason Cultivars)

Cultivar	Days to harv	Heat Units to Harv.	Adjusted Heat U based on 100 TU	Sieve 1 %	Sieve 2 %	Sieve 3 %	Sieve 4 %	Sieve 5%	Sieve 6 %	Sieve size index	Ten.	#/A	Adjusted Yield based on 100 TU	Plants per A (1000)	Plts. per foot
BSC5760	56	1455	1470	14	16	24	26	13	1	3.1	93	2588	2794	432	5.0
BSC5760	57	1488	1497	8	15	24	27	19	2	3.4	95	3075	3205	438	5.0
BSC5760	59	1557	1495	2	5	12	32	38	9	4.3	131	4781	3913	451	5.2
BSC 2030	56	1455	1481	5	15	28	37	11	1	3.4	87	4185	4549	397	4.6
BSC 2030	57	1488	1496	2	7	26	39	24	1	3.8	96	5550	5662	430	4.9
BSC 2030	59	1557	1486	1	2	8	39	41	7	4.4	136	5884	4886	422	4.8
Spartan	57	1488	1497	4	8	21	31	28	5	3.9	96	4316	4437	345	4.0
Spartan	58	1520	1502	2	5	17	32	35	6	4.1	109	5721	5469	425	4.9
CS426	58	1520	1515	3	10	25	39	18	1	3.7	103	4581	4506	388	4.5
CS426	59	1557	1512	2	5	16	43	28	4	4.0	123	4810	4175	431	5.0
BSC 5697	58	1520	1526	5	13	24	35	11	9	3.6	97	4044	4128	330	3.8
BSC 5697	59	1557	1498	1	6	19	36	31	6	4.1	130	4258	3427	337	3.9
Ashton	59	1557	1529	3	5	12	28	33	16	4.3	114	4490	4098	384	4.4
Sw. Savor DA1470	58	1520	1531	3	7	17	32	31	8	4.1	95	2842	2992	411	4.7
Sw. Savor DA1470	59	1557	1537	4	4	13	25	34	17	4.4	110	2552	2272	330	3.8
Sw. Savor DA1470	60	1597	1533	2	4	9	27	33	23	4.6	132	3278	2382	356	4.1
PLS 134	59	1557	1544	5	8	22	34	24	3	3.8	107	4381	4195	418	4.8
PLS 134	60	1597	1548	3	7	12	35	29	9	4.1	124	4882	4201	421	4.8
Tamarac	59	1557	1553	3	6	14	33	33	7	4.1	102	4596	4540	459	5.3
Tamarac	60	1597	1580	4	7	11	29	33	13	4.2	108	4327	4094	398	4.6
Bolero	58	1520	1536	3	7	19	34	28	7	4	92	3991	4215	342	3.9

Table 4. Maturity Sieve Distribution and Yield - Main Season Cultivars

Cultivar	Days to harv	Ht units to harv	Adjusted Heat U based on 100 TU	Sieve 1 %	Sieve 2 %	Sieve 3 %	Sieve 4 %	Sieve 5%	Sieve 6 %	Sieve size index	Ten.	#/A	Adjusted Yield based on 100 TU	Plants per A (1000)	Plts. per foot
Grundy	60	1597	1571	1	3	8	39	40	8	4.4	113	4008	3644	368	4.2
Grundy	61	1628	1564	1	1	5	28	54	10	4.6	132	6254	5358	425	4.9
PLS196	60	1597	1588	34	4	13	28	19	2	3.0	105	5242	5111	447	5.1
PLS196	61	1628	1589	2	4	13	38	37	4	4.2	120	5881	5330	516	5.9
EX 08260893	60	1597	1606	5	9	16	32	29	7	3.9	96	4795	4917	469	5.4
EX 08260893	61	1628	1620	3	7	16	31	31	10	4.1	104	5703	5591	446	5.1
EX 08260893	62	1668	1603	1	2	7	23	52	14	4.7	133	6530	5616	407	4.7
Hyperion	61	1628	1637	6	13	23	30	21	4	3.6	96	3485	3606	436	5.0
Hyperion	62	1668	1629	3	7	13	31	36	8	4.2	119	4461	3920	392	4.5
Mundial	61	1628	1653	6	13	23	30	22	5	3.7	88	4508	4854	375	4.3
Mundial	62	1668	1635	2	5	15	34	33	11	4.3	116	6447	5990	428	4.9
Prometheus	62	1668	1689	11	10	22	38	17	2	3.4	90	4320	4609	325	3.7
Prometheus	63	1701	1720	2	6	16	35	37	4	4.1	91	5209	5470	432	5.0
Prometheus	64	1733	1723	2	5	16	44	30	3	4.1	105	6269	6129	396	4.5
Prometheus	65	1761	1738	1	3	11	36	42	5	4.3	112	6262	5935	412	4.7
Maurice	63	1701	1731	7	15	29	28	14	1	3.3	85	1819	2239	381	4.4
Maurice	64	1733	1752	9	13	26	27	18	1	3.4	91	1877	2138	324	3.7
Maurice	65	1761	1748	5	9	22	32	25	4	3.8	106	2240	2062	369	4.2

|Column Descriptions on page 9

Explanation for Headings in Table 4.

Days to Harvest - Number of days from planting until day of harvest.

Heat Units to Harvest - Accumulation of heat units (base 40 degree F.) from planting until harvest.

Adjusted heat units base 40 - Adjusted to 100 tenderometer reading. Two heat units were added for each unit below 100 and two units were subtracted for each unit above 100.

Average sieve percentage - Berries were hand sieved with Seedburo screens. The table on the title page describes the size of the various sieves.

Sieve Size index - Sieve size index reflects the mean sieve size of the variety at harvest.

Tenderometer measurement - A model TG4EI Integrating Texturegagage was used to determine the tenderometer units of each harvested plot. The average of the three harvested plots per cultivar was listed.

Yield - Tons per acre - The weight of the harvested berries was extrapolated to tons per acre.

Yield lbs/A - Pounds per acre was determined by extrapolating the total weight of the berries per plot to obtain lbs per acre. Harvest plot was 7 rows by 5 ft in length or 35 row feet. (43560 sq ft/A/.5 ft = 87,120 row ft per acre. 87120 row ft /A divided by 35 harvested row ft gives a factor of 2489. This factor was multiplied by total berry weight harvested per plot to obtain lbs per acre.

Adjusted Yield lbs/acre - 28 pounds was added for each tenderometer unit reading below 100. 28 pounds was subtracted for each tenderometer unit reading above 100.

Plants/foot - Total number of plants harvested was divided by the 35 row feet harvested to arrive at plants per foot.

Plant population per acre - An extrapolation of the number of harvested plants to plants per acre.

Explanation for Headings in Table 5.

This data was from 30 plants harvested the same day as our yield harvest that was closest to our objective of 100 tenderometer unit reading. Example - Variety A was harvested twice at tenderometer readings of 99 and 116. The afternoon of the first harvest (99 units), 30 plants were harvested from the back of the plot, weighed and pods were hand stripped and berries were hand shelled.

Node to first flower - The average number of nodes on the stem until the first flower (included that one or two at the soil line or below).

Average Number of nodes with pods per plant - The number of nodes that had pods were counted and recorded.

Weight of the 30 plant sample - The weight of the sample (plants and pods) was recorded in pounds.

Weight of the plants - After the pods were taken off and weighed, the calculation was made of the plant weight.

Weight of the pods - After the pods were hand picked from the plant, total weight of the pods was recorded in pounds.

Weight of the berries - The berries were hand shelled from pods, counted and weighed in pounds.

Pods per plant - The total number of pods was divided by 30 (number of plants) to determine average pods per plant.

Percentage of single pods, double pods or triple pods per node - The number of pods per node were hand counted and the number of single pods, double pods and triple pods were recorded. This was changed to a percentage.

Pod length - An average of 10 pods were lined up and measured in inches. If they were very uniform, a single number was listed, if not a range was listed.

Berries per pod - Ten uniform pods were selected and opened. The range of berries per pod in this group was listed.

Table 5. Plant and Pod Characteristics (In order of maturity)

Cultivar	Node to first flower	ave. # nodes with pods/plt	Wt. Of plants and pods (lb)	Wt. of plants (lb)	Wt. of pods (lb)	Wt of berries (lb)	Pods per plant	% Single pods/node	% Double pods/node	% Triple pods/node	% Quad. Pods /node	Pod length (in)	Berries per pod	Vine Length (in.)
Early Season														
PLS90004	7 to 9	3.0	2.14	1.07	1.07	0.57	3.3	91	8	1	0	3.25-3.75	7 to 8	22
Salinero	6 to 7	3.6	1.94	0.85	1.09	0.51	3.9	92	7	1	0	2.25-2.75	5 to 7	16-18
Strike	8	3.9	1.94	0.88	1.06	0.53	4.3	88	12	0	0	2.75-3.0	6 to 7	20-22
Pizarro	8 to 9	3.4	1.6	0.66	0.94	0.47	3.8	88	12	0	0	2.5-2.75	6	18-19
EX 08250826	8 to 11	3.6	2.4	1.2	1.2	0.56	5.1	61	38	1	0	2.5-3.25	7 to 9	17-18
FP2269	9 to 10	2.7	1.76	0.75	1.01	0.5	3.5	68	33	0	0	2.5-3.0	6 to 8	18
Uno	11	3.8	2.05	1.06	0.99	0.46	5.7	51	47	2	0	2.5-3.0	5	21
EF680	6 to 8	2.7	2.05	1.06	0.99	0.51	3.3	78	21	1	0	3.0-3.5	5 to 8	15-17
Crescendo	9 to 11	3.9	2.71	1.49	1.22	0.55	6.3	47	45	7	1	2.5-3.0	7 to 9	21-23
CS416	10 to 12	3.4	2.1	1.1	1	0.45	5.3	44	55	1	0	3.0-3.5	6 to 8	19-21
Austin	11 to 13	3.2	2.44	1.13	1.31	0.66	4.4	64	36	0	0	3.0-3.5	6 to 8	19-21
PLS14	9 to 10	2.4	1.52	0.63	0.89	0.49	3.7	45	52	3	0	2.25-2.75	5 to 7	19-21
PLS 304	9 to 12	2.6	2.16	1.07	1.09	0.59	4.6	41	46	8	5	2.5-3.0	6 to 8	19-21
Lil'Mo	8 to 10	3.5	3.4	2.24	1.16	0.73	5.5	46	50	4	0	2.5-3.0	8 to 10	16-18
Mid Season														
CS 424	10 to 11	2.6	2.6	1.36	1.24	0.77	4.8	40	36	24	0	2.5-3.0	6 to 8	17-20
EXPO2708	9 to 12	2.7	2.05	0.94	1.11	0.71	4.6	39	55	6	0	2.5-3.25	6 to 8	20-23
PLS 167	8 to 11	2.8	21.14	20.15	0.99	0.57	5.7	28	42	25	5	2.75-3.25	8 to 10	19-22
Reliance	9 to 11	2.3	2.32	1.6	0.72	0.34	3.0	59	32	9	0	2.5-3.0	6 to 9	21-23
Sienna	6 to 10	2.7	2.5	1.35	1.15	0.66	4.2	51	40	9	0	3.0-3.5	6 to 8	21-23
EX 08570935	8 to 13	2.6	3.03	2.01	1.02	0.41	4.1	51	41	6	1	2.75-3.25	7 to 10	18-20
BSC5091	10 to 12	3.2	2.52	1.3	1.22	0.73	5.7	39	46	13	1	2.5-3.25	7 to 8	15-18
BSC4551	9 to 12	2.5	2.27	1.23	1.04	0.54	3.6	57	42	1	0	2.5-3.0	7 to 8	19-21

Table 5. Plant and Pod Characteristics continued:

Cultivar	Node to first flower	ave. # nodes with pods/plt	Wt. Of plants and pods (lb)	Wt. of plants (lb)	Wt. of pods (lb)	Wt of berries (lb)	Pods per plant	% Single pods/node	% Double pods/node	% Triple pods/node	% Quad. Pods /node	Pod length (in)	Berries per pod	Vine Length (in.)
Mid Season continued.														
New PLS 560	12 to 14	2.2	2.97	2.01	0.96	0.4	4.3	48	38	12	2	3-3.75	8 to 10	22-24
BSC5760	10 to 14	3.4	2.23	1.25	0.98	0.39	5.4	45	51	4	0	2.5-3.25	5 to 7	19-21
BSC 2030	12 to 14	2.4	2.06	0.99	1.07	0.63	4.6	32	48	21	0	2.25-3.0	6 to 8	20-22
Spartan	13-15	2.5	2.36	1.38	0.98	0.47	4.0	42	57	1	0	3.0-3.5	7 to 8	19-21
CS426	12 to 15	2.3	2.35	1.28	1.07	0.51	3.6	49	43	7	0	3.0-3.5	7 to 10	19-22
BSC 5697	12 to 14	3.5	3.2	1.81	1.39	0.84	6.0	40	46	13	0	2.5-3.5	7 to 9	16-19
Ashton	12 to 15	2.3	2.07	1.1	0.97	0.55	4.1	35	47	18	0	2.5-3.25	6 to 9	20-23
Sw. Savor DA1470	9 to 12	1.4	2.3	1.72	0.58	0.45	2.3	53	37	7	2	2.5-3.0	5 to 8	17-20
PLS 134	12 to 16	2.3	1.93	0.99	0.94	0.44	3.9	34	64	1	0	2.5-3.5	8 to 9	17-19
Tamarac	13-15	2.0	2.41	1.39	1.02	0.49	3.5	33	62	5	0	2.25-3.0	6 to 8	19-21
Main Season														
Grundy	15-18	2.2	1.93	0.97	0.96	0.52	3.5	42	55	3	0	3-4.25	7 to 10	20-23
PLS196	13-16	2.1	1.7	0.91	0.79	0.47	3.4	41	56	3	0	2.5-3.75	8 to 10	19-21
EX 08260893	15-18	3.2	3.46	2.19	1.27	0.62	6.2	34	39	27	0	2.5-3.25	6 to 9	24-26
Hyperion	15-18	2.8	2.94	1.71	1.23	0.59	5.4	33	40	28	0	2.25-3.0	7 to 9	19-22
Mundial	15-17	3.1	2.6	1.33	1.27	0.8	6.1	27	52	21	0	2.5-3.0	5 to 8	17-19
Prometheus	19-22	2.2	2.94	1.78	1.16	0.7	4.9	27	31	37	4	2.25-3.0	7 to 9	22-25
Maurice	19-21	2.3	2.4	1.63	0.77	0.32	4.0	44	37	19	0	2.5-3.0	5 to 9	21-23

See page 9 for column explanations

Table 6. Maturity continued:

Tenderometer unit measurement (Days after planting - gray area indicates days of actual harvest)

Cultivar	Days to Full Flower	Heat Units to Flower	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
New PLS 560	47	1185							88	103	108							
BSC5760	49	1244							93	95		131						
BSC 2030	44	1071					73		87	96		136						
Spartan	48	1215							81	96	109							
CS426	48	1215								95	103	123						
BSC 5697	46	1147								88	97	130						
Ashton	48	1215								81	86	114						
Sw. Savor DA1470	48	1215								87	95	110	132					
PLS 134	49	1244								77	93	107	124					
Tamarac (CS40)	49	1244									87	102	108					
Bolero											92	109						
Grundy	48	1215								80	83	93	113	132				
PLS196	49	1244										94	105	120				
EX 08260893	49	1244								73	74	84	96	104	133			
XP 08250833	51	1292										78	89	96	119			
Mundial	51	1292										76	84	88	116			
EX 08560906	52	1318											72	79	90	91	105	112
XP 08250838	53	1345												82		85	91	106

Table 7. Berry Characteristics

Cultivar	Berry Color	Berry Color Intensity	Flavor
PLS90004	3	3	OK
Salinero	3	3	OK
Strike	3.5	3	B-OK
Pizarro	3	3	OK
EX 08250826 (PA0826)	3.5	3	OK
FP2269	3	3	OK
Uno (FP2292)	3	3.5	OK-G
EF680	3	3	OK
Crescendo	3	3	OK-G
CS416	3	3	OK
Austin (FP2311)	3	3	OK
PLS14	3	3	OK
PLS 304	3	3	OK
Lil'Mo	3.5	3	OK
CS424	4	3.5	OK
EXPO2708	3	3	OK
PLS 167	3	3.5	OK
Reliance	4	3.5	OK
Sienna	3.5	3.5	OK
EX 08570935	3.5	3	OK
BSC5091	3	3	OK
BSC4551	3	3	OK
New PLS 560	3.5	3	OK
BSC5760	3	3	OK
BSC 2030	3	3	OK-G
Spartan	3.5	3	OK-G
CS426	3	3	OK
BSC 5697	3.5	3	OK
Ashton	3	3	OK
Sweet Savor DA1470	3	3	OK
PLS 134	3	3	OK
Tamarac (CS401AF)	3.5	3	OK
Grundy	3	3	OK
PLS196	3	3	OK
EX 08260893	3	3	OK
XP 08250833 (Hyperion)	3.5	3	OK-G
Mundial	3.5	3	OK-G
EX 08560906 (Prometheus)	3.5	3	OK-G
XP 08250838 (Maurice)	3.5	3	OK

Berry Color - 5 = Dark green, 1 = Light green

Berry Color Intensity - 5 = most intense, 1 = least intense

Flavor - B = Blah, Ok = Acceptable, G = Good

Additional Comments:

Early Season:

PLS90004 – Light green foliage, good pod set, few brown, dried up plants, single pods per node, decent yield for this season.

Salinero – Fair plant habit, medium green foliage, good pod set, single pods per node, good yield.

Strike – Poor plant habit, medium to dark green foliage, good pod set, single pods per node, good yield.

Pizarro – So so plant habit, decent pod set, single pods per node.

EX08250826 – Ok plant habit, seems a bit indeterminate (flowers and young pods still there at harvest), smaller sieve, 61% single pods and 38% double pods per node.

FP2269 – Good plant uniformity, so so habit, pods high on the plant, larger sieve size, roughly 2/3 single pods and 1/3 double pods per node, good yield.

Uno – Thin stand, ok plant habit, good pod set, roughly 50% single pods and 50% double pods per node.

EF680 – Short plants with acceptable plant habit, flowered over a period of time (not a concentrated pod set), larger sieve, $\frac{3}{4}$ single pods and $\frac{1}{4}$ double pods per node.

Crescendo – Decent plant habit, good pod set, pods high on the plant, small sieve, roughly 50% single pods and 50% double pods per node, very good yield.

CS416 – Good plant habit and pod set, pods high on the plant, roughly 50% single pods and 50% double pods per node, good yield.

Austin – Good plant habit, good pod set with pods high on the plant, large sieve, roughly 2/3 single pods and 1/3 double pods per node.

PLS14 – Good plant with decent plant habit, pods high on the plant, very good pod set, smaller, uniform pods, roughly 50% single pods and 50% double pods per node very good yield, stood out from others.

PLS304 – Very good pod set with pods high on the plant, nice pods, roughly 50% single pods and 50% double pods per node, good yield.

Lil Mo – Good plant habit, very good pod set, small, short pods, small sieve, roughly 50% single pods and 50% double pods per node, good yield.

Mid Season:

CS424 – Thinner plant stand, good pod set with pods high on the plant, larger sieve, 24% triple pods per node, berries a bit darker than other cultivars, very good yield.

EXP02708 – Good plant stand and pod set, larger sieve, roughly 40% singles and 60% double pods per node, very good yield.

PLS167 – Long, narrow pods located high on the plant; very good pod set; smaller sieve, 28% singles, 42% doubles and 25% triple pods per node, good yield, looks good.

Reliance – Excellent plant habit; uneven maturity, plants drying up, decent pod set with pods high on the plant, 59% singles, 32% doubles and some triples, berries a bit darker than others, did not yield.

Additional comments continued:

Sienna – Good plant stand, decent plant habit and pod set, pods high on the plant, large sieve, 51% singles, 40% doubles and some triples, very good yield.

EX08570935 – Good plant stand, very good plant habit and pod set, pods high on the plant, 51% singles, 41% doubles and some triples, stands out from the others but yield did not measure up to what it looked like it would.

BSC5091 – Thinner plant stand, 39% singles, 46% doubles and 13% triples, good pod set and yield.

BSC4551 – Decent pod set, 57% singles and 42% doubles, larger sieve and very good yield.

New PLS560 – Thin stands, Good plant habit, uniform pods, 48% singles, 38% doubles and 12% triples, good pod set but need to have better stand to properly evaluate.

BSC5760 – Decent pod set, short pods, roughly 50% single pods and 50% double pods per node, did not yield.

BSC2030 – Listed as early maturity but two years in a row it has been more mid to mainseason here in NY, lots of pods located high on the plant, 32% singles, 48% doubles & 21% triples, very good yield.

Spartan – Thinner plant stand, good pod set, 42% singles and 57% doubles, good yield.

CS426 – Thinner stand, very good pod set, long pods high on the plant, roughly 50% single pods and 50% double pods per node. Looks good.

BSC5697 – Thin stand, decent pod set, pods high on the plant, 40% singles, 46% doubles and 13% triples, not able to evaluate yield without better stand.

Ashton – Thinner plant stand, good pod set with pods high on the plant, 35% singles, 47% doubles and 18% triples.

Sw. Savor DA1470 – Good plant habit but lots of plants without pods; thinner stand, 53% singles, 37% doubles and some triples, did not yield.

PLS134 – Good stand with a good pod set, pods high on the plant, 34% singles and 64% doubles.

EX08240782 – Poor stand (not harvested), small sieve, decent pod set, uniform, narrow pods.

Tamarac – Thinner stand, decent pod set, 33% singles, 62% doubles and a few triples.

Grundy – Thinner stand, decent pod set, long pods, larger sieve, roughly 50% single pods and 50% double pods per node.

PLS196 – Decent plant habit, lots of long pods high on the plant, good yield, sieve size seemed to jump quickly, roughly 50% single pods and 50% double pods per node.

EX08260893 – Good plant stand, good pod set with pods high on the plant, 34% singles, 39% doubles and 27% triples, good yield.

Hyperion – Excellent plant habit, indeterminate (blossoms at harvest), good pod set with pods high on the plant, 33% singles, 40% doubles and 28% triples.

Mundial – Decent stand, good pod set, pods high on the plant, 27% singles, 52% doubles and 21% triples, very good yield.

Additional comments continued:

Prometheus – Good pod set with short pods, third harvest did not fit pattern, tenderometer readings moved fairly slow and allowed four harvests, 27% singles, 31% doubles and 37% triples, very good yield.

Maurice – Excellent plant habit, uneven pod set (looked like two sets), very low yield due to several plants not having any pods, 44% singles, 37% doubles and 19% triples.

Descriptions Provided by the Seed Source

PLS90004 – Pure Line, afila leaf type, 1100 heat units,

Salinero – Seminis, normal leaf type, 1155 heat units to harvest, 3.4 average sieve, 9-10 nodes to first flower, 1-2 pods per node, 7-8 berries per pod, plant height 14 inches, HR for Bean Yellow Mosaic virus and Fusarium wilt race 1, IR for Downy Mildew. (Breeder comments – very early, good processed product, similar sieve style and quality to Cabree but 15 heat units earlier.)

Strike – Pure Line, normal leaf type, first early, 1140 heat units, 22-24 inch plant height, 9 nodes to first flower, pod length 3.25 inches and blunt, mostly singles with a few doubles; resistance to Fusarium Wilt race 1, tolerance to Pythium root rot, ideal for organic processing

Pizarro – Seminis, afila leaf type, 1170 heat units, 3.5 average sieve, 10 nodes to first flower, 1-2 pods per node, 7-8 berries per pod, 20 inch plant height, HR for BYMV/Fop:1, IR Pv. Breeder comments – Early afila with similar yield potential and sieve size to Ice Pack. With the added value of DM intermediate resistance.

EX08250826 – Seminis, Dark green large early, 1250 heat units, normal leaf type, 2.5 average sieve size, 11 nodes to flower, 2 pods per node, 7-8 berries per pod, 20 inches plant height, Breeder comments – sweet savor gene, IR for Pv, HR for Fop :1,2, HR for BYMV, intermediate sieve size.

FP2269 – Gallatin Valley, Early afila leaf type with great emergence in cool soils. Maturity near 1200 heat units, 10 nodes to first flower, 3.9 average sieve size. Good yield

Uno (FP2292) – Gallatin Valley, – Early normal leaf type with good plant vigor and stand. Maturity is considered 57 days or near 1200 heat units, 10 nodes to first flower. Good yield.

EF680 – Gallatin Valley, Early normal leaf type that has been around for many years. Maturity is considered 58 days or near 1230 heat units. Great quality with a berry size near 4.0 sieve

Crescendo – Seminis, normal leaf type, mid early maturity or 1230 heat units, 2.5 sieve, 10-11 nodes to first flower, 2-3 pods per node, 7-9 berries per pod, 18 inch plant height, resistant to bean yellow mosaic virus, downy mildew and Fusarium wilt race 1.

CS416 – Crites, 1320 heat units, afila leaf type, 3.9 average sieve size, resistance to Fusarium wilt race 1.

Austin FP2311 - Gallatin Valley, Second early afila leaf type with good plant vigor. Maturity is considered 60 days or near 1280 heat units. Good plant type.

PLS14 – Pure Line, 1160 heat units, normal leaf type,

PLS304 – Pure Line, afila leaf type, midseason maturity (1350 heat units), 3.5 average sieve size.

Lil' Mo – Seminis, 1320 heat units to harvest, normal leaf type, 2.6 ave. sieve, 10-11 nodes to first flower, 1-2 pods per node, 8-9 berries per pod, 18 inch plant height, HR for fusarium wilt races 1&2.

Descriptions Provided by the Seed Source continued:

CS424 – Crites, normal leaf type, midseason maturity (1390 heat units), 3.9 average sieve size, resistance to Fusarium wilt race 1.

EXP02708 – Crites, afila leaf type, 1440 heat units, 3.85 average sieve size, resistance to Fusarium wilt race 1 and powdery mildew.

PLS167 – Pure Line, midseason (1400 heat units), afila leaf type, 3.1 average sieve size.

Reliance – Seminis, determinate afila type, 1430 or midseason maturity, 14 nodes to first flower, 2-3 pods per node, 8 berries per pod, 3.2 average sieve size, 18 inch plant height, HR for bean yellow mosaic virus, Downy Mildew, Fusarium wilt races 1&2, Pea enation mosaic virus and Powdery Mildew. Breeder Comments – Afila determinate type (The 2nd reproductive node is a terminal node with 2 racemes). This variety does not carry the Sweet Savor gene but it appears to be relatively slow in the conversion of sugar to starch. It carries resistance to many common diseases and gives a very homogenous fresh product in color and quality on an easy to harvest plant type.

Sienna – Brotherton, normal leaf type, 63 days to maturity (1350 heat units), 10-11 nodes to first flower, 6-8 berries per pod, 3.8 average sieve size, 2-3 pods per node, 28.0 inch plant height.

EX08570935 – Seminis, Sweet Savor gene, Determinate afila leaf type, 1340 heat units to harvest, 3.1 average sieve size, 12 nodes to first flower, 2-3 pods per node, 7-8 berries per pod, 16 inch plant height. HR for BYMV/Ep/PEMV/Fop:1,2, IR Pv. Breeder Comments – Experimental, second early and an expanded disease resistance package. This variety combines higher sweetness, slower conversion to sugar to starch, uniform color and sieve size on an easy to harvest plant type.

BSC5091 – Brotherton, midseason, 1450 heat units, 14 nodes to first flower, normal leaf type, compare to Bingo.

BSC4551 – Brotherton, early season, 1430 heat units, 13 nodes to first flower, normal leaf type, compare to Estancia.

New PLS560 – Pure Line, midseason, 1430 heat units, afila leaf type, 3.7 average sieve size, 18-22 inch plant height, 2 pods per node, resistance to Fusarium wilt races 1 and 2, and to downy mildew

BSC5760 – Brotherton, early, 1360 heat units, 12 nodes to first flower, normal leaf type, compare to Tonic.

BSC2030 – Brotherton, Early maturity (1220 heat units), normal leaf type, 9-10 nodes to flower.

Spartan – Brotherton, midseason maturity (1460 heat units), afila type, 13-14 nodes to first flower.

CS426 – Crites, afila leaf type, 1520 heat units, 3.8 average sieve size, resistance to Fusarium wilt race 1 and powdery mildew.

BSC 5697 – Brotherton, normal leaf type, (1480 heat units), 14-15 nodes to first flower, 5-9 berries per pod, 3.4 average sieve size, 2-3 pods per node, 19 inch plant height, compare to Ashton.

Ashton – Seminis, mainseason maturity, 1480 heat units, normal leaf type, 3.3 average sieve size, 14-15 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 24 inch plant height, resistance to BYMV and Fusarium wilt race one, resistance to PM, IR to DM. Breeder comments – similar to Bolero for maturity, with a somewhat smaller sieve size. Added benefits of intermediate resistance to common races of downy mildew with high resistance to powdery mildew, and has also performed very well in Europe, Australia and New Zealand. Excellent yield.

Descriptions Provided by the Seed Source continued:

Sweet Savor DA1470 – *Seminis*, 1470 heat units, determinate afila type, 3.2 average sieve size, 2-3 pods per node, 7-9 berries per pod, 18 inch plant height, HR Fop 1 and BYMV. Sweet savor gene which slows conversion of sugar to starch, true determinate plant type which allows for improved sieve distribution and less waste at harvest from immature fruit.

PLS 134 – *Pure Line*, afila leaf type, midseason, 1480 heat units, 14 nodes to first flower, 3.6 average sieve size, 25-27 inch plant height, 2 pods per node, resistance to *Fusarium wilt race 1* and resistance to downy mildew.

Tamarac – *Crites*, afila leaf type, 1570 heat units, 3.95 average sieve size, resistance to *Fusarium wilt race 1 and 2*, and powdery mildew.

Grundy – *Galetin Valley*, normal leaf type, midseason maturity (1595 heat units), 16 nodes to first flower, 2 pods per node, 3.8 average sieve size, 8-9 berries per pod, 28 inch plant height, pointed pod shape, high resistance to *fusarium wilt races 1 and 2*, high resistance to powdery mildew, IR for *Pea Enation Mosaic Virus*.

PLS196 – *Pure Line*, late season (1600 heat units), 3.7 average sieve size, afila type.

Ex08260893 – *Seminis*, late season, 1525 heat units, normal leaf type, 3.50 average sieve size, 14 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 24 inch plant height, HR for BYMV/Ep/Fop:1, IR for Pv. Breeder comments – *Experimental variety* – full season with normal leaves, high yield and intermediate resistance to common races of downy mildew, Powdery mildew resistant. In the *Bolero/Genie* segment.

Hyperion – *Seminis*, late season, 1575 heat units, afila leaf type, 3.1 average sieve size, 16 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 24 inch plant height, HR for PEMV/Ep/Fop:1,2, IR for Pv. Breeder comments – *Experimental variety* – late season afila foliage. Very good disease package. Will replace AKURA in EMEA.

Mundial (XP08530727) – *Seminis*, a new, late maturing, normal leaf type with a nice short plant that appears to stand better compared to many other normal foliage varieties, maturity is approximately 1600 heat units with a 3.25 sieve size, resistance to powdery mildew and races 1 and 2 of the *fusarium wilt fungus*, intermediate resistance against common races of downy mildew, 15-16 nodes to first flower, 2-3 pods per node, 7-9 berries per pod, yield potential has been excellent.

Prometheus – *Seminis*, late season, 1650 heat units, 3.4 average sieve size, 16 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 24 inch plant height, HR for BYMV/Fop:1/PEMV/Ep, IR for Pv. Breeder comments – *late season normal foliage variety*. High yielding variety in a very unique maturity with a very good disease package. Will replace Mundial in Europe.

Maurice – *Seminis*, late season, 1650 heat units, 3.1 average sieve size, 17 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 20 inch plant height, HR for Asc-C/Fop:1,2/PEMV/Ep, IR for Pv. Breeder comments – *Experimental variety* – late season, afila foliage with the Sweet Savor gene. Enhanced sweetness with a very good disease package and a smaller sieve size.

Table 8. Weather Summary

Day	Day	Max. Temp.	Min. Temp.	Mean Temp.	Precip.	Acc Precip.	Degree days base 40	acc dd units base 40
5/7/12	1	66	45	55.5	0	0	15.5	15.5
5/8/12	2	64	48	56	0.57	0.57	16	31.5
5/9/12	3	66	52	59	0.31	0.88	19	50.5
5/10/12	4	67	46	56.5	0.01	0.89	16.5	67
5/11/12	5	57	42	49.5	0	0.89	9.5	76.5
5/12/12	6	66	47	56.5	0	0.89	16.5	93
5/13/12	7	78	55	66.5	0	0.89	26.5	119.5
5/14/12	8	72	55	63.5	0	0.89	23.5	143
5/15/12	9	73	55	64	0	0.89	24	167
5/16/12	10	72	55	63.5	0.04	0.93	23.5	190.5
5/17/12	11	77	41	59	0	0.93	19	209.5
5/18/12	12	62	38	50	0	0.93	10	219.5
5/19/12	13	73	47	60	0	0.93	20	239.5
5/20/12	14	83	52	67.5	0	0.93	27.5	267
5/21/12	15	86	60	73	0	0.93	33	300
5/22/12	16	80	59	69.5	0	0.93	29.5	329.5
5/23/12	17	78	60	69	0	0.93	29	358.5
5/24/12	18	77	57	67	0	0.93	27	385.5
5/25/12	19	81	64	72.5	0	0.93	32.5	418
5/26/12	20	87	63	75	0	0.93	35	453
5/27/12	21	81	54	67.5	0	0.93	27.5	480.5
5/28/12	22	80	59	69.5	0	0.93	29.5	510
5/29/12	23	90	66	78	0.11	1.04	38	548
5/30/12	24	89	62	75.5	0.41	1.45	35.5	583.5
5/31/12	25	74	52	63	0	1.45	23	606.5
6/1/12	26	65	48	56.5	0	1.45	16.5	623
6/2/12	27	64	52	58	0.31	1.76	18	641
6/3/12	28	66	54	60	0.01	1.77	20	661
6/4/12	29	64	51	57.5	0.13	1.9	17.5	678.5
6/5/12	30	58	49	53.5	0.14	2.04	13.5	692
6/6/12	31	66	47	56.5	0	2.04	16.5	708.5
6/7/12	32	73	51	62	0.1	2.14	22	730.5
6/8/12	33	76	52	64	0	2.14	24	754.5
6/9/12	34	80	60	70	0.22	2.36	30	784.5

6/10/12	35	73	60	66.5	0.42	2.78	26.5	811
6/11/12	36	87	64	75.5	0	2.78	35.5	846.5
6/12/12	37	89	65	77	0.46	3.24	37	883.5
6/13/12	38	76	51	63.5	0.47	3.71	23.5	907
6/14/12	39	67	49	58	0	3.71	18	925
6/15/12	40	75	52	63.5	0	3.71	23.5	948.5
6/16/12	41	81	57	69	0.02	3.73	29	977.5
6/17/12	42	82	61	71.5	0	3.73	31.5	1009
6/18/12	43	83	64	73.5	0	3.73	33.5	1042.5
6/19/12	44	74	63	68.5	0.2	3.93	28.5	1071
6/20/12	45	88	63	75.5	0	3.93	35.5	1106.5
6/21/12	46	92	68	80	0	3.93	40	1146.5
6/22/12	47	90	67	78.5	0	3.93	38.5	1185
6/23/12	48	80	60	70	0	3.93	30	1215
6/24/12	49	80	58	69	0	3.93	29	1244
6/25/12	50	81	55	68	0.03	3.96	28	1272
6/26/12	51	67	53	60	0.08	4.04	20	1292
6/27/12	52	73	58	65.5	0	4.04	25.5	1317.5
6/28/12	53	78	57	67.5	0	4.04	27.5	1345
6/29/12	54	87	64	75.5	0	4.04	35.5	1380.5
6/30/12	55	88	65	76.5	0	4.04	36.5	1417
7/1/12	56	88	67	77.5	0	4.04	37.5	1454.5
7/2/12	57	84	62	73	0	4.04	33	1487.5
7/3/12	58	83	61	72	0	4.04	32	1519.5
7/4/12	59	89	66	77.5	0	4.04	37.5	1557
7/5/12	60	92	67	79.5	0	4.04	39.5	1596.5
7/6/12	61	83	60	71.5	0	4.04	31.5	1628
7/7/12	62	92	68	80	0	4.04	40	1668
7/8/12	63	80	66	73	0.24	4.28	33	1701
7/9/12	64	82	61	71.5	0	5.5	31.5	1732.5
7/10/12	65	79	57	68	0	5.5	28	1760.5
7/11/12	66	82	56	69		5.5	29	1789.5
7/12/12	67	85	57	71		5.5	31	1820.5
7/13/12	68	90	62	76		5.5	36	1856.5
7/14/12	69	91	67	79		5.5	39	1895.5
7/15/12	70	89	72	80.5	0.01	5.51	40.5	1936