

NEW YORK STATE 2021 PROCESSING PEA CULTIVAR TRIAL REPORT

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I would like to dedicate all my work during the 2021 season and beyond, to my late father, Lester W. Fillingham, he was a veteran, volunteer fireman, longtime lineman, proud family man and above all else, the kindest, fairest man I have ever known. May my work be a reflection of your love and guidance.

Procedure & Materials

Location: Cornell AgriTech 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** – 4/28. Harvest started on 6/24 and was finished on 7/13. **Herbicide** – Dual directly after planting. **Plot Size:** 7 rows by 30 ft. **Row Width:** 6 inches, Row length: 30 ft. **In-row Spacing:** All cultivars were adjusted (seed planted) to 100% germination. Our processor has asked us to approximate 600,000 plants per acre for early, 570,000 for second early and 550,000 plants per acre for the rest. **Insecticide** – none. **Experimental Design** – Randomized split block design, 4 replications (3 replications were harvested, and another was left for demonstration). **Model TG4EI Integrating Texturegag** – measure for maturity.

The objective of this trial was to compare several 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 and seed companies, in an attempt to find new, higher quality, and disease resistant varieties that are adapted to our climate and soil conditions. Evaluation of processed products is scheduled to be held on 11/04/21 for processing and seed company representatives.

Yield of seven rows by 5 feet per replication (**35 Row feet**) was obtained by pulling the plants and hand picking the pods. Two harvests were taken, if possible, to plot yield increase and also tenderometer reading increase. A target tenderometer value of 110 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

This spring was abnormally dry, and fields were workable earlier than usual. Field conditions were decent at planting. The day after planting, we received about 0.5 inches of rain, and cool, slightly wet conditions persisted for about two weeks. There were several instances in May and June where hot dry periods were followed by cool periods and rains. Supplemental irrigation was not provided as rainfall provided adequate. For the months of May and June, 2.2 and 2.8 inches of rain fell, respectively. Then, in the first 13 days of July, Geneva received 3.30 inches of rain. Overall, pea season was mostly mild, with both dry and wet periods. See the weather insert at the end of the summary for a breakdown of temperatures and precipitation over the growing season.

Table 2 - Cultivar List and Maturity From Seed Sources								
Cultivar	GDD (40F)	Seed Source	Leaf Type	Seed Treatment	Seed Count/lb	Germ. %	Sieve index	Node to blossom
Spring	1100	Pure Line	normal leaf	LSV + Cruiser 0.75	2961	95	4.1	9 to 10
Eldorado	1100	Pure Line	normal leaf	LSV + Cruiser 0.75	2586	95	3.8	9 to 10
Sherwood	1160	Seminis	normal leaf	allegiance, captan, cruiser	2400	99	3.3	9 to 10
SV5795QE	1170	Seminis	normal leaf	allegiance, captan, cruiser	/	95	/	10
SV3628QH	1205	Seminis	normal leaf	allegiance, captan, cruiser	2619	95	/	10 to 11
EXP461	1216	Brotherton	afila	allegiance, captan, cruiser	2413	95	3.2	9 to 10
DGL0027	1250	Pure Line	afila	LSV + Cruiser 0.75	3328	95	3.5	12
PLS-M14	1250	Pure Line	normal leaf	LSV + Cruiser 0.75	2290	95	4	9 to 10
CS455AF	1355	Crites	afila	maxim, Apron, Cruiser	2100	99	3.7	10
Saltingo	1300	Pure Line	afila	LSV + Cruiser 0.75	2213	95	3.5	11
Portage	1305	Crites	afila	allegiance, captan, cruiser	2032	99	3.8	8 to 11
BSC905	1332	Brotherton	normal leaf	allegiance, captan, cruiser	4725	99	1.4	11 to 12
EXP125	1332	Brotherton	afila	allegiance, captan, cruiser	2548	99	3.1	14
EXP773	1332	Brotherton	normal leaf	allegiance, captan, cruiser	2592	95	3.4	13
SV0969QH	1360	Seminis	normal leaf	allegiance, captan, cruiser	3340	98	3.1	/
Nitro	1370	Seminis	normal leaf	/	4800	/	2	13 to 14
518	1410	GVS	afila	maxim/Apron XL	2400	96	3.8	11
BSC712	1422	Brotherton	afila	allegiance, captan, cruiser	1786	99	3.8	14
PLS 586	1430	Pure Line	afila	LSV + Cruiser 0.75	1991	95	4	12 to 13
CS494DAF	1470	Crites	Det afila	maxim, Apron, Cruiser	2800	97	3.1	12 to 13
SV3290QF	1450	Seminis	normal leaf	allegiance, captan, cruiser	2518	90	/	14 to 15
PLS 576	1450	Pure Line	afila	LSV + Cruiser 0.75	2424	95	3.6	12 to 13
BSC599	1469	Brotherton	afila	allegiance, captan, cruiser	2268	95	3.8	15
Da1470	1470	Seminis	Det afila	/	2683	/	/	/
PLS 602	1470	Pure Line	afila	LSV + Cruiser 0.75	2414	95	3.1	15 to 16
SV1231QF	1480	Seminis	afila	/	2900	/	3.2	15
Boogie	1490	Brotherton	afila	allegiance, captan, cruiser	2075	99	4.3	14
828	1500	GVS	afila	/	2300	98	3.8	14 to 15
SV0823QG	1525	Seminis	afila	/	2669	/	3.3	17
Ricco	1530	GVS	afila	/	2375	/	3.7	15 to 16
CS464AF	1565	Crites	afila	maxim, Apron, Cruiser	2400	99	3.7	15
SV6844QG	1600	Seminis	afila	/	2500	/	3.6	17
PLS196	1600	Pure Line	afila	LSV + Cruiser 0.75	2307	95	4	16
SV5685QG	1750	Seminis	normal leaf	/	2347	/	3.4	20

Table 3. Plant Characteristics

Cultivar	GDD to full flower	Plant Stand Rating	Trial Root Rot Rating	Root Rot Trial*	Plant Habit Rating (Harvest)	Overall Rating
Sherwood	725	2.75	5.0	3.00	3.00	3.4
Eldorado	725	2.75	5.0	3.00	2.50	3.3
Spring	799	2.50	5.0	2.75	2.50	3.2
SV3628QH	861	3.25	5.0	3.50	3.50	3.8
SVS795QE	861	2.75	5.0	3.00	3.00	3.4
PLSM14	861	3.25	5.0	3.50	3.50	3.8
CS455AF	861	3.50	5.0	3.00	3.00	3.6
EXP461	889	3.50	5.0	3.50	3.50	3.9
Portage	918	3.25	5.0	3.00	3.00	3.6
EXP773	918	3.25	5.0	3.50	3.50	3.8
BSC905	948	3.00	5.0	3.25	3.50	3.7
518	948	3.25	5.0	3.50	3.75	3.9
DGL0027	918	3.25	5.0	3.75	3.75	3.9
Nitro	975	3.00	5.0	3.50	3.75	3.8
EXP125	975	3.00	5.0	4.00	3.75	3.9
BSC599	975	4.00	5.0	3.00	3.25	3.8
Saltingo	948	3.50	5.0	3.25	3.50	3.8
SV0969QH	975	3.00	5.0	3.75	3.75	3.9
SV3290QF	1020	3.50	5.0	3.00	3.75	3.8
828	1000	3.75	5.0	3.50	3.75	4.0
CS494DAF	1000	2.75	5.0	3.00	4.00	3.7
PLS586	1000	3.25	5.0	3.25	3.50	3.8
Ricco	1000	3.50	5.0	3.50	3.00	3.8
CS464AF	1020	3.25	5.0	3.50	3.50	3.8
PLS576	1000	3.25	5.0	3.50	3.75	3.9
BSC712	1020	3.75	5.0	3.25	3.50	3.9
DA1470	1020	3.00	5.0	2.75	3.00	3.4
Boogie	1000	3.25	5.0	4.00	4.00	4.1
PLS602	1044	3.50	5.0	3.00	3.25	3.7
SV1231QF	1072	3.50	5.0	4.25	4.00	4.2
SV0823QG	1107	4.00	5.0	3.25	4.00	4.1
PLS196	1107	3.00	5.0	3.00	4.25	3.8
SV6844QG	1138	2.50	5.0	3.50	4.50	3.9
SV5685QG	1310	3.75	5.0	3.50	3.50	3.9

Explanations for Headings in Table 3:

GDD to Full Flower – Monitored peas to identify full flower date and used base 40F for growing degree days.

Plant Stand Rating – About three weeks after planting, a visual evaluation of the plant stand is made, using a scale of 1 to 5. 1 – Few plants, extremely patchy, 5 – full stand, no empty patches.

Trial Root Rot Rating – Root rot is scouted for in the harvested reps of the variety trial and rated on a scale of 1 to 5. 1 – completely dead, 5 – no visual symptoms.

***Root Rot Trial** - A field at the research farm was converted to a root rot nursery. We plant peas annually to encourage inoculum and plant all the varieties in the variety trial into that field and rate for root rot damage using a scale of 1 to 5. 1 – completely dead, 5 – no visual symptoms.

Plant Habit Rating – Each varieties habit is visually measured at the time of harvest closest to a 110 TU reading. 1 - totally recumbent, 5 - completely erect.

rOverall Rating – An average of plant stand rating, plant habit rating, and both root rot ratings.

Table 4. Maturity Sieve Distribution and Yield - (in order of maturity)

Cultivar	Days to harv.	GDDr	% Sieve >1	% Sieve 1	% Sieve 2	% Sieve 3	% Sieve 4	% Sieve 5	% Sieve 6	% 6> Sieve	Sieve size index	Ten.	Berries (lbs/A)	Tons/Acre	Adj. Yield Based on 110 TU*	Adj. Tons/Acre*	Plants per Acre (1000)
Sherwood	54	1175	0	1	5	22	42	28	2	0	4.0	91	5741	2.87	7923	3.96	546
Sherwood	55	1192	0	1	3	13	37	41	5	0	4.3	102	6189	3.09	6746	3.37	499
Sherwood	56	1213	0	0	1	10	34	45	10	0	4.5	110	5932	2.96	5932	2.96	471
Eldorado	54	1175	0	1	5	20	37	35	2	0	4.1	93	5650	2.80	7402	3.70	547
Eldorado	55	1192	0	1	2	10	33	47	7	0	4.4	103	6621	3.30	7084	3.54	499
Eldorado	56	1213	0	0	1	8	21	42	28	0	4.9	103	6177	3.08	6609	3.30	471
Spring	54	1175	1	7	5	21	30	31	5	0	3.9	83	3683	1.84	-	-	444
Spring	55	1192	12	11	17	5	15	28	7	5	3.6	93	3721	1.86	4875	2.43	454
Spring	57	1239	0	1	2	6	19	36	33	3	4.9	102	5028	2.50	5481	2.51	407
SV3628QH	55	1192	0	2	11	39	38	10	0	0	3.4	81	5210	2.60	-	-	531
SV3628QH	57	1239	0	1	3	16	43	34	3	0	4.2	97	6413	3.20	7631	3.81	550
SV3628QH	58	1271	0	1	2	11	31	48	7	0	4.4	109	7060	3.50	7131	3.56	519
SVS795QE	57	1239	1	3	10	38	38	9	1	0	3.4	86	4775	2.39	-	-	486
SVS795QE	58	1271	1	2	8	31	43	15	0	0	3.6	95	5032	2.50	6290	3.14	412
SVS795QE	59	1310	0	1	4	24	49	20	2	0	3.9	108	5720	2.86	5834	2.91	459
PLSM-14	57	1239	0	1	4	21	31	41	2	0	4.1	83	6168	3.08	-	-	469
PLSM-14	58	1271	1	1	1	11	41	42	3	0	4.3	97	8081	4.04	9616	4.80	574
PLSM-14	59	1310	0	1	2	10	40	43	4	0	4.3	104	6807	3.40	7215	3.60	424
CS455AF	60	1352	0	0	2	11	35	44	8	0	4.5	114	8363	4.18	8028	4.01	532
CS455AF	61	1396	0	0	1	7	33	47	12	0	4.6	143	8882	4.44	7550	3.77	456
EXP461	58	1271	2	7	17	35	30	9	0	0	3.2	81	5082	2.54	-	-	562
EXP461	60	1352	0	2	6	25	39	26	2	0	3.9	108	6716	3.36	6850	3.42	502
Portage	60	1352	0	0	4	14	31	42	9	0	4.4	99	7587	3.79	8725	4.36	518
Portage	61	1396	0	0	1	9	30	50	10	0	4.6	124	8077	4.03	7350	3.67	502
EXP773	60	1352	0	0	3	13	33	45	6	0	4.4	94	7276	3.64	9313	4.65	543
EXP773	61	1396	0	0	2	10	28	47	13	0	4.6	124	8276	4.14	7531	3.75	504
BSC905	61	1396	4	12	34	37	12	1	0	0	2.5	110	6139	3.06	6139	3.06	543
BSC905	62	1439	2	14	46	35	3	0	0	0	2.3	122	6392	3.20	5881	2.94	542

Table 4. Maturity Sieve Distribution and Yield - (in order of maturity) Cont.

Cultivar	Days to harv.	GDDr	% Sieve >1	% Sieve 1	% Sieve 2	% Sieve 3	% Sieve 4	% Sieve 5	% Sieve 6	% 6> Sieve	Sieve size index	Ten.	Berries (lbs/A)	Tons/Acre	Adj. Yield Based on 110 TU*	Adj. Tons/Acre*	Plants per Acre (1000)
518	63	1476	0	1	2	7	31	50	9	0	4.5	131	8405	4.20	7396	3.69	523
DGL0027	60	1352	0	1	7	27	44	21	0	0	3.8	85	5791	2.90	-	-	552
DGL0027	61	1396	0	1	3	17	44	35	0	0	4.1	94	5633	2.81	7210	3.60	472
DGL0027	62	1439	0	0	2	8	35	51	4	0	4.5	118	7388	3.70	6945	3.47	403
Nitro	62	1439	3	15	41	39	2	0	0	0	2.3	105	5621	2.81	5902	2.95	546
Nitro	63	1476	2	10	32	52	4	0	0	0	2.5	122	5413	2.70	4980	2.49	461
EXP125	63	1476	0	1	5	27	56	11	0	0	3.7	134	6077	3.03	5287	2.64	505
BSC599	63	1476	0	0	1	6	26	58	9	0	4.7	125	8579	4.29	7807	3.90	556
Saltingo	61	1396	0	1	6	21	47	25	0	0	3.9	93	7446	3.72	9754	4.87	543
Saltingo	62	1439	0	0	4	19	45	30	2	0	4.1	101	8243	4.12	9150	4.57	558
Saltingo	63	1476	0	0	2	14	50	33	1	0	4.2	118	8483	4.24	7974	3.98	462
SV0969QH	62	1439	2	4	15	37	36	6	0	0	3.3	97	5546	2.77	6600	3.30	451
SV0969QH	63	1476	1	3	10	32	44	10	0	0	3.5	116	7160	3.58	6802	3.40	460
SV3290QF	63	1476	0	3	10	24	56	7	0	0	3.5	104	7035	3.50	7457	3.72	583
828	64	1505	2	2	4	19	54	18	1	0	3.9	156	8641	4.30	7172	3.58	563
CS494DAF	64	1505	2	2	5	26	38	22	5	0	3.9	132	5397	2.70	4749	2.37	489
CS494DAF	65	1530	0	1	8	25	42	21	3	0	3.8	158	6745	3.37	5598	2.79	514
PLS586	64	1505	1	2	2	14	52	26	3	0	4.1	129	8753	4.38	7790	3.89	554
PLS586	65	1530	0	0	1	5	41	47	6	0	4.5	158	8857	4.40	7351	3.67	480
Ricco	64	1505	0	1	2	7	22	57	11	0	4.7	124	9454	4.73	8603	4.30	486
CS464AF	64	1505	0	0	3	19	51	26	1	0	4.0	119	8894	4.45	8360	4.18	553
CS464AF	66	1556	0	0	3	16	48	30	3	0	4.1	130	8732	4.40	7771	3.88	462
PLS576	64	1505	1	1	2	9	42	40	5	0	4.3	118	9143	4.60	8594	4.29	558
PLS576	65	1530	0	0	1	6	39	46	8	0	4.5	144	9014	4.50	7662	3.83	513
BSC712	64	1505	1	1	3	17	40	35	3	0	4.2	114	9396	4.70	9020	4.51	541
BSC712	65	1530	0	0	1	9	34	45	11	0	4.6	138	9674	4.84	8320	4.16	487
DA1470	64	1505	1	2	4	22	48	21	2	0	3.9	112	6372	3.20	6245	3.12	463

Table 4. Maturity Sieve Distribution and Yield - (in order of maturity) Cont.

Cultivar	Days to harv.	GDDr	% Sieve >1	% Sieve 1	% Sieve 2	% Sieve 3	% Sieve 4	% Sieve 5	% Sieve 6	% 6> Sieve	Sieve size index	Ten.	Berries (lbs/A)	Tons/Acre	Adj. Yield Based on 110 TU*	Adj. Tons/Acre*	Plants per Acre (1000)
Boogie	65	1530	0	0	1	5	18	50	25	1	4.9	129	8247	4.12	7340	3.67	540
PLS602	65	1530	1	4	12	44	37	3	0	0	3.2	112	7322	3.66	7176	3.58	475
PLS602	66	1556	0	2	6	30	54	7	0	0	3.6	119	7413	3.70	6968	3.48	424
SV1231QF	65	1530	0	2	4	18	45	29	2	0	4.0	108	6135	3.07	6258	3.12	540
SV1231QF	66	1556	0	1	4	16	45	32	2	0	4.1	118	6990	3.50	6571	3.28	530
SV0823QG	64	1505	1	4	8	33	44	10	0	0	3.5	99	5816	2.90	6688	3.34	472
SV0823QG	66	1556	0	5	8	26	42	19	0	0	3.6	103	6235	3.12	6671	3.33	432
SV0823QG	68	1614	0	0	4	16	37	37	6	0	4.3	132	7015	3.50	6173	3.08	373
PLS196	68	1614	0	2	3	7	26	53	9	0	4.5	106	8483	4.24	8822	4.41	487
PLS196	69	1654	0	0	2	5	17	55	21	0	4.9	119	9433	4.70	8867	4.43	424
SV6844QG	68	1614	0	2	6	19	24	35	14	0	4.3	87	4555	2.30	-	-	316
SV6844QG	69	1654	0	1	4	12	27	43	13	0	4.5	93	5368	2.70	7032	3.51	286
SV6844QG	70	1683	0	1	2	8	25	39	23	2	4.7	105	6260	3.13	6573	3.28	263
SV5685QG	72	1744	0	2	6	18	32	34	8	0	4.1	76	6451	3.23	-	-	506
SV5685QG	75	1824	0	0	4	11	19	34	28	4	4.7	99	9840	4.90	11316	5.65	448
SV5685QG	76	1861	0	0	3	10	19	35	27	6	4.8	103	10147	5.07	10857	5.42	427

^ Font in bold represents harvests that were closest to a 110 TU reading

*The formula for adjusted yield is most accurate when TU readings are closest to 110 (see factors on table 7)

† Growing Degree days base 40F

-Column explanations page 9

Explanation for Headings in Table 4:

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

Growing Degree Days (GDD) - Accumulation of heat units (base 40-degree F.) from planting until harvest.

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 Texturegauge was used to determine the tenderometer units of each harvested plot. The average of the three harvested plots per cultivar was listed.

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. $(43560 \text{ sq ft/A} / .5 \text{ ft} = 87,120 \text{ row ft per acre})$. $87120 \text{ row ft /A divided by 35 harvested row ft gives a factor of 2489}$. This factor was multiplied by total berry weight harvested per plot to obtain lbs per acre.

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

Adjusted Yield lbs/acre - A correlation factor was used to adjust yield based on a tenderometer reading of 110. For example, if a sample read 90 Tenderometer Units, we would then multiple the yield by a correlation factor of 1.42. Please see correlation factors in Table 7.

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

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

Cultivar	Node to first flower (avg.)	Vine length (in) (avg.)	Ht. at harvest (in)	Pods per plant (avg.)	Avg. # nodes w/ pods/ plt.	# of Single pods/ node	# of Double pods/ node	# Triple pods/ node	# Quad. pods/ node	% of Single pods/ node	% of Double pods/ node	% of Triple pods/ node	% of Quad. pods/ node	Berries per pod (avg.)	Pod length (in) (avg.)
Sherwood	9	14	10 to 11	2.80	2.20	1.50	0.67	0.00	0.00	69	31	0	0	5.8	2.5
Eldorado	10	21	10 to 11	4.00	3.60	3.10	0.43	0.00	0.00	88	12	0	0	6.0	2.7
Spring	9	18	11 to 12	2.80	2.30	1.76	0.53	0.00	0.00	77	23	0	0	5.4	2.9
SV3628QH	11	16	10	3.10	1.90	0.73	1.10	0.03	0.00	39	60	1	0	7.6	2.8
SVS795QE	9	14	11	3.70	2.50	1.30	1.20	0.00	0.00	51	49	0	0	6.7	2.6
PLSM14	8	17	10 to 11	3.60	2.20	0.67	1.50	0.00	0.00	31	69	0	0	7.1	2.7
CS455AF	9	15	10 to 12	3.6	2.10	0.83	1.10	0.16	0.00	39	53	8	0	6.7	2.8
EXP461	11	15	10 to 12	4.9	3.10	1.40	1.70	0.03	0.00	44	55	1	0	6.4	2.8
Portage	11	17	9 to 11	4.0	2.30	0.83	1.20	0.23	0.00	36	54	10	0	5.6	2.6
EXP773	10	18	10 to 12	4.3	2.70	1.10	1.50	0.07	0.00	42	56	2	0	6.1	2.7
BSC905	10	18	11 to 13	5.8	3.40	1.40	1.60	0.36	0.00	41	48	11	0	7.9	2.7
518	10	16	10 to 13	3.6	3.30	3.00	0.30	0.00	0.00	91	9	0	0	7.6	3.7
DGL0027	10	20	11 to 13	3.2	2.30	1.43	0.90	0.00	0.00	61	39	0	0	7.4	3.6
Nitro	12	16	10 to 13	5.4	2.93	1.03	1.30	0.60	0.00	35	44	21	0	8.2	4.7
EXP125	12	17	11 to 13	3.3	1.96	0.83	0.96	0.20	0.00	42	49	9	0	6.9	3.0
BSC599	14	24	11 to 13	4.8	3.26	1.73	1.53	0.00	0.00	53	47	0	0	8.0	3.5
Saltingo	11	20	11 to 13	3.9	2.50	1.10	1.40	0.00	0.00	43	57	0	0	7.7	3.4
SV0969QH	11	17	10 to 12	4.4	2.50	0.86	1.23	0.36	0.00	35	50	15	0	7.1	3.1
SV3290QF	12	18	11 to 14	5.9	3.03	1.16	1.06	0.63	0.16	38	35	21	6	6.4	3.5
828	12	18	10 to 13	4.00	2.20	0.63	1.36	0.20	0.00	29	62	9	0	6.9	2.8
CS494DAF	10	15	10 to 13	2.70	2.13	1.60	0.53	0.00	0.00	75	25	0	0	7.4	3.2
PLS586	11	15	10 to 12	3.2	2.13	1.23	0.70	0.20	0.00	58	33	9	0	7.4	3.2

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

Cultivar	Node to first flower (avg.)	Vine length (in) (avg.)	Ht. at harvest (in)	Pods per plant (avg.)	Avg. # nodes w/ pods/pl. (avg.)	# of Single pods/node	# of Double pods/node	# Triple pods/node	# Quad. pods/node	% of Single pods/node	% of Double pods/node	% of Triple pods/node	% of Quad. pods/node	Berries per pod (avg.)	Pod length (in) (avg.)
CS464AF	13	20	11 to 13	4.70	2.90	1.36	1.26	0.26	0.00	47	44	9	0	6.5	3.0
PLS576	11	18	11 to 13	4.10	2.93	1.83	1.03	0.06	0.00	63	35	2	0	8.2	3.3
BSC712	12	20	11 to 14	3.5	2.20	1.06	0.96	0.16	0.00	48	44	8	0	6.7	2.6
DA1470	10	16	11 to 13	3.10	2.16	1.26	0.90	0.00	0.00	58	42	0	0	5.7	2.9
Boogie	12	15	10 to 13	3.90	2.46	1.16	1.20	0.10	0.00	47	49	4	0	6.2	2.9
PLS602	13	20	11 to 13	5.20	3.16	1.16	2.00	0.00	0.00	37	63	0	0	7.8	3.1
SV1231QF	14	20	12 to 15	4.60	2.63	1.06	1.06	0.43	0.06	41	41	16	2	7.8	2.9
SV0823QG	13	21	11 to 15	5.60	2.86	0.76	1.46	0.63	0.00	27	51	22	0	6.8	3.2
PLS196	12	17	11 to 13	3.70	2.36	1.10	1.23	0.03	0.00	47	52	1	0	8.4	3.5
SV6844QG	14	21	12 to 15	4.30	3.26	2.26	0.96	0.03	0.00	69	30	1	0	8.3	3.1
SV5685QG	20	25	11 to 16	5.20	3.20	1.40	1.56	0.23	0.00	44	49	7	0	8.8	3.7

Explanation for Table 5:

This data was derived from 30 plants harvested the same day as our yield harvest that was closest to our objective of 110 tenderometer unit reading. Example – Variety X was harvested twice at tenderometer readings of 99 and 116. The afternoon of the second harvest (116 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).

Height at Harvest – Height was measured day of optimal harvest.

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

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

Number and 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.

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

Pod length - 10 pods were lined up and measured in inches and an average reported.

Table 6. Maturity

Cultivar	Day 54	Day 55	Day 56	Day 57	Day 58	Day 59	Day 60	Day 61	Day 62	Day 63	Day 64	Day 65	Day 66	Day 67	Day 68	Day 69	Day 70	Day 71	Day 72	Day 73	Day 74	Day 75	Day 76
	1175 6/21	1192 6/22	1213 6/23	1239 6/24	1271 6/25	1310 6/26	1352 6/27	1396 6/28	1439 6/29	1476 6/30	1505 7/01	1530 7/02	1556 7/03	1582 7/04	1614 7/05	1654 7/06	1683 7/07	1713 7/08	1744 7/09	1771 7/10	1796 7/11	1824 7/12	1861 7/13
Sherwood	92	102	110																				
Eldorado	93	103	103																				
Spring	83	93		102																			
SV3628QH		81		97	109																		
SVS795QE				86	95	108																	
PLSM14				83	97	104																	
CS455AF							114	143															
EXP461					81		108																
Portage							99	124															
EXP773							94	124															
BSC905								110	122														
518									119	131													
DGL0027							85	94	118														
Nitro									105	122													
EXP125										134													
BSC599										125													
Saltingo								93	101	118													
SV0969QH								97	116														
SV3290QF									104														
828											156												
CS494DAF											132	158											
PLS586											129	158											
Ricco											124												
CS464AF											119	130											
PLS576											118	144											
BSC712											114	138											
DA1470											112												
Boogie											110	129											
PLS602												112	119										
SV1231QF												108	118										
SV0823QG										99		103		132									
PLS196														106	119								
SV6844QG														87	93	105							
SV5685QG																		76				99	103

*Growing Degree Days (GDD) base 40F

Table 7. Weather Summary and 110 tenderometer chart										
Date	day	Mean Temp.	Min. Temp.	Max. Temp.	Precip.	Acc Precip.	Degree days base (40F)	acc dd units base 40	Ten. Units	Correlation factor for Yield
4/28/21	0	59.5	49.5	70.5	0.05	0.05	0	0	80	2.33
4/29/21	1	49.4	46.4	51.6	0.52	0.57	9	9	81	2.18
4/30/21	2	45.7	33.6	50.2	0.02	0.59	2	11	82	2.05
Total Precipitation April ---->						0.59 in		11 GDD		
Table 7. Weather Summary and 110 tenderometer chart cont.										
Date	day	Mean Temp.	Min. Temp.	Max. Temp.	Precip.	Acc Precip.	Degree days base (40F)	acc dd units base 40	Ten. Units	Correlation factor for Yield
5/1/21	3	44.0	33.4	56.8	0.01	0.01	5	16	83	1.93
5/2/21	4	56.3	49.3	63.7	0.02	0.03	17	33	84	1.82
5/3/21	5	56.7	49.3	66.6	0.13	0.16	18	51	85	1.72
5/4/21	6	61.3	51.8	73.6	0.08	0.24	23	74	86	1.64
5/5/21	7	52.4	46.9	58.5	0.07	0.31	12	86	87	1.57
5/6/21	8	47.2	39.9	54.9	0.00	0.31	7	93	88	1.51
5/7/21	9	42.1	34.0	49.8	0.32	0.63	2	95	89	1.46
5/8/21	10	45.0	39.6	52.9	0.33	0.96	6	101	90	1.42
5/9/21	11	45.8	40.3	54.0	0.31	1.27	7	108	91	1.38
5/10/21	12	48.4	41.4	57.4	0.05	1.32	9	117	92	1.34
5/11/21	13	45.9	38.3	52.5	0.00	1.32	5	122	93	1.31
5/12/21	14	51.1	40.6	61.5	0.00	1.32	11	133	94	1.28
5/13/21	15	55.9	45.9	66.0	0.00	1.32	16	149	95	1.25
5/14/21	16	58.7	48.6	70.2	0.00	1.32	19	168	96	1.22
5/15/21	17	59.0	43.0	72.3	0.00	1.32	18	186	97	1.19
5/16/21	18	58.1	43.2	71.1	0.00	1.32	17	203	98	1.17
5/17/21	19	61.6	48.0	74.1	0.00	1.32	21	224	99	1.15
5/18/21	20	65.3	48.4	78.6	0.00	1.32	24	248	100	1.13
5/19/21	21	69.3	53.6	83.7	0.00	1.32	29	277	101	1.11
5/20/21	22	70.8	55.8	87.4	0.00	1.32	32	309	102	1.09
5/21/21	23	74.9	61.0	90.3	0.00	1.32	36	345	103	1.07
5/22/21	24	73.3	66.2	81.5	0.00	1.32	34	379	104	1.06
5/23/21	25	66.3	55.0	78.3	0.00	1.32	26	405	105	1.05
5/24/21	26	61.1	44.8	75.2	0.00	1.32	20	425	106	1.04
5/25/21	27	70.0	58.8	88.5	0.07	1.39	34	459	107	1.03
5/26/21	28	72.7	64.2	85.3	0.18	1.57	34	493	108	1.02
5/27/21	29	56.8	45.7	63.3	0.00	1.57	15	508	109	1.01
5/28/21	30	44.2	41.5	46.6	0.58	2.15	4	512	110	1.00
5/29/21	31	48.9	41.9	56.8	0.04	2.19	9	521	111	0.99
5/30/21	32	50.7	41.4	58.6	0.00	2.19	10	531	112	0.98
5/31/21	33	58.7	42.1	71.6	0.00	2.19	17	548	113	0.97
Total Precipitation May ---->						2.19 in		548 GDD		

Table 7. Weather Summary and 110 tenderometer chart cont.

Date	day	Mean Temp.	Min. Temp.	Max. Temp.	Precip.	Acc Precip.	Degree days base (40F)	acc dd units base 40	Ten. Units	Correlation factor for Yield
6/1/21	34	63.3	52.5	74.5	0.00	0.00	24	572	114	0.96
6/2/21	35	62.7	48.9	73.0	0.00	0.00	21	593	115	0.96
6/3/21	36	66.1	60.8	75.4	0.34	0.34	28	621	116	0.95
6/4/21	37	70.7	59.7	81.0	0.00	0.34	30	651	117	0.95
6/5/21	38	77.1	66.2	87.3	0.00	0.34	37	688	118	0.94
6/6/21	39	78.3	64.6	89.8	0.00	0.34	37	725	119	0.94
6/7/21	40	78.3	65.3	89.8	0.06	0.40	38	763	120	0.93
6/8/21	41	74.6	69.3	83.1	0.31	0.71	36	799	121	0.93
6/9/21	42	74.5	66.9	79.9	0.00	0.71	32	831	122	0.92
6/10/21	43	69.2	58.3	80.8	0.00	0.71	30	861	123	0.92
6/11/21	44	68.2	54.7	82.2	0.00	0.71	28	889	124	0.91
6/12/21	45	68.1	60.6	79.2	0.00	0.71	29	918	125	0.91
6/13/21	46	71.8	56.5	83.8	0.00	0.71	30	948	126	0.90
6/14/21	47	67.5	59.7	74.5	0.49	1.20	27	975	127	0.90
6/15/21	48	62.6	59.2	70.3	0.01	1.21	25	1000	128	0.89
6/16/21	49	60.6	51.8	68.9	0.01	1.22	20	1020	129	0.89
6/17/21	50	63.9	52.7	75.4	0.00	1.22	24	1044	130	0.89
6/18/21	51	68.3	54.9	79.2	0.01	1.23	28	1072	131	0.88
6/19/21	52	74.7	63.7	85.5	0.20	1.43	35	1107	132	0.88
6/20/21	53	71.2	58.1	84.2	0.00	1.43	31	1138	133	0.88
6/21/21	54	75.0	66.4	89.1	0.81	2.24	37	1175	134	0.87
6/22/21	55	58.2	52.7	64.4	0.00	2.24	17	1192	135	0.87
6/23/21	56	60.6	48.6	73.9	0.00	2.24	21	1213	136	0.87
6/24/21	57	67.4	52.9	78.4	0.00	2.24	26	1239	137	0.86
6/25/21	58	72.2	61.9	82.9	0.00	2.24	32	1271	138	0.86
6/26/21	59	77.3	68.2	88.9	0.00	2.24	39	1310	139	0.86
6/27/21	60	81.9	71.6	92.3	0.00	2.24	42	1352	140	0.86
6/28/21	61	83.8	75.7	93.0	0.00	2.24	44	1396	141	0.85
6/29/21	62	79.8	70.5	95.4	0.24	2.48	43	1439	142	0.85
6/30/21	63	76.3	70.7	83.5	0.12	2.60	37	1476	143	0.85
Total Precipitation June				---->		2.60 in		1476 GDD		

Table 7. Weather Summary and 110 tenderometer chart cont.										
Date	day	Mean Temp.	Min. Temp.	Max. Temp.	Precip.	Acc Precip.	Degree days base (40F)	acc dd units base 40	Ten. Units	Correlation factor for Yield
7/1/21	64	70.5	64.8	75	0.00	0.00	29	1505	144	0.85
7/2/21	65	63.5	58.8	70.3	0.80	0.80	25	1530	145	0.85
7/3/21	66	65.1	60.3	72.5	0.07	0.87	26	1556	146	0.84
7/4/21	67	67.0	59.2	74.3	0.00	0.87	26	1582	147	0.84
7/5/21	68	72.2	55.0	89.1	0.00	0.87	32	1614	148	0.84
7/6/21	69	79.8	73.6	85.6	0.00	0.87	40	1654	149	0.84
7/7/21	70	70.3	61.0	76.6	0.84	1.71	29	1683	150	0.84
7/8/21	71	68.5	61.2	77.5	0.38	2.09	30	1713	151	0.83
7/9/21	72	69.0	63.9	77.9	0.40	2.49	31	1744	152	0.83
7/10/21	73	67.2	61.5	74.1	0.01	2.50	27	1771	153	0.83
7/11/21	74	64.5	59.4	70.9	0.28	2.78	25	1796	154	0.83
7/12/21	75	67.0	61.7	74.5	0.39	3.17	28	1824	155	0.83
7/13/21	76	75.5	68.0	85.3	0.13	3.30	37	1861	156	0.83
Total Precipitation July					---->	3.30 in		1861 GDD		

*Growing degree days (GDD) base 40F

Descriptions Provided by the Seed Source:

Spring – Pure Line, normal leaf, 1100 heat units, 4.5 average sieve size, 9 nodes to flower, 1-2 pods per plant, 6-7 berries per pod, 16-inch plant height, resistance to Fusarium wilt race 1.

Eldorado – Pure Line, normal leaf type, 3.8 sieve size, -1 days to maturity relative to Spring, 1100 heat units, resistant to Fusarium race 1 and powdery mildew.

Sherwood – Seminis, normal leaf, 1160 heat units, 3.3 sieve size, IR: PV, HR: BYMV/FOP:1

SVS795QE – Seminis, normal leaf, 1170 GDD base 40F. 10 nodes to blossom.

SV3628QH – Seminis, normal leaf, 1205 GDD base 40F. 10-11 nodes to blossom.

EXP 461 – Brotherton, afila leaf type, 1216 heat units, 59 days to maturity, 3.2 average sieve size.

DGL0027 – Pure Line, afila leaf type, 1250 GDD base 40F. 3.5 sieve index and 12 nodes to flower.

PLSM14 - Pure Line, normal leaf type, +4 days to maturity relative to Spring, 1250 heat units, 3.8 sieve size, resistance to Fusarium Wilt race1.

CS-455AF – Crites, 1355 heat units to maturity, afila leaf type, disease resistance: Fop 1, Pv+, 2 days earlier than Portage, good root system.

Saltingo - Pure Line, afila leaf type, 3.5 sieve size, +4 days to maturity relative to Spring, 1300 heat units, resistant to Fusarium Wilt race 1 and powdery mildew, tolerant to downy mildew and pea enation mosaic virus.

Portage – Crites, midseason maturity, 60 days to maturity or approximately 1305 heat units (+ 2 days relative to Tomahawk), afila leaf type, 18 inch plant height, 10 nodes to first bloom, 2-3 pods per node, 7-8 peas per pod, 3.7 sieve size index, resistant to fusarium wilt race 1.

BSC905 – Brotherton, normal leaf, 1332 Heat Units, 65 days to maturity, 1.4 sieve index.

EXP125 - Brotherton, afila leaf type, 1332 heat units. 65 days to maturity, 3.1 average sieve size.

EXP773 – Brotherton, normal leaf, 1332 GDD base 40F. 3.4 sieve index and 13 nodes to blossom.

SV0969QH – Seminis, normal leaf, 1360 GDD base 40F. 3.1 sieve index.

Nitro – Seminis, 1370 heat units, normal leaf, 2 sieve size, HR: BYMV/FOP.

GVS 518 – Gallatin Valley, Mid-season Afila type, 67 days to maturity, 1410 heat units, 12-13 nodes to first flower, plant height 25”, avg. 2 pods per node, avg. sieve size is 3.8, pointed pod shape.

BSC712 – Brotherton, 1422 heat units, afila leaf type, 68 days to maturity, 3.8 average sieve size. 14 nodes to blossom.

PLS586 – Pure Line, afila leaf type, 1430 GDD base 40F. 4.0 sieve index and 12-13 nodes to flower.

Descriptions Provided by the Seed Source Continued:

CS494DAF – Crites, afila leaf type, 1470 heat units, 71 days to maturity, 2.8 average sieve size, small sieve size class.

SV3290QF – Seminis, normal leaf, 1450 GDD base 40F. 14-15 nodes to blossom.

PLS576 – Pure Line, afila leaf type, 1450 GDD base 40F. 3.6 sieve index and 12-13 nodes to flower.

BSC599 – Brotherton, afila leaf type, 1469 heat units, 3.8 average sieve size. 15 nodes to blossom.

DA1470 (EX08540794) – Seminis, 1470 heat units, determinate afila type, 3.2 average sieve size, 2-3 pods per node, 8-9 berries per pod, 18 inch plant height, HR for Fusarium R1 and bean yellow mosaic virus. 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.

PLS602 – Pure Line, afila leaf type, +11 days to maturity relative to Spring, 1470 heat units, 3.1 sieve size, resistance to FWR1,r2, Fus.RR, PM.

SV1231QF – Seminis, 1480 heat units, afila sweet savor, 15 nodes to first flower, 2-3 pods per node, 7-8 berries per pod, IR for Downy Mildew, HR for Powdery Mildew, Fusarium R1&R2, pea enation mosaic virus and bean yellow mosaic virus

Boogie – Brotherton, afila, 1490 HU or 68 days to maturity. 4.3 sieve and 14-15 nodes to first flower. Resistance to PM and tolerance to DM.

828 - Gallatin Valley, afila leaf type, 14 nodes to bloom, 1500 heat units, 3.8 sieve.

SV0823QG – Seminis, 1525 heat units, afila plant type, 3.3 average sieve size, 17 nodes to first flower, 2-3 pods per node, 8-9 berries per pod, 45 cm plant height, 2600 seeds per pound, Ir for Downy Mildew and HR for Powdery Mildew, Fusarium R1 and Pea Enation mosaic virus.

Ricco – Gallatin Valley, Main season variety 1530 heat units, afila leaf type, 16 nodes to first flower, 26 inch plant height, 2 pods per node, 3.7 average sieve size, 8-9 berries per pod, pointed pod shape, HR for Fusarium wilt race 1 and IR for race 2, HR for Bean Leaf Roll Virus and Powdery Mildew race 1, dark green foliage, excellent disease package including root rot tolerance, superior yield, medium size berry, uniform berry color, widely adapted.

CS-464AF – Crites, 1565 heat units to maturity, disease resistance: Fop 1&2, Ep, PEMV, afila type leaf, triple pods, main-season, disease package.

SV6844QG - Seminis, 1600 heat units, afila, Fasc; sweet savor, 3.6 sieve size, 17 nodes to first flower, 2-3 pods per node, 7-8 berries per pod, IR for Downy Mildew, HR for Powdery Mildew, Fusarium R1 &R2, Pea Enation Mosaic Virus and Bean yellow mosaic virus.

PLS196 – Pure Line, afila, +13 days to maturity relative to Spring, 1600 heat units, 4.0 sieve, resistance to FWR1,2, Fus.RR, PM, tolerant: Downy Mildew.

SV5685QG – Seminis, 1750 heat units, normal leaf.

- 2021 Annual Cutting -

A socially distanced, vegetable “cutting”, is planned for November 4th, where frozen peas, snap beans, and sweet corn will be put on display for processors and seed companies to evaluate. Large and 3-4 sieve snap beans were canned and will also be put on display. Our vegetable cutting is the final step of our program’s evaluation. We evaluate the horticultural characteristics in the field and in raw products, but our vegetable cutting takes us all the way to quality evaluation on the plate.