

TITLE OF PROJECT: 2015 Processing Pea Cultivar Evaluation - Early Planting

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METHODS: Fifty-two pea cultivars were submitted to the 2015 trial, with Spring included as a standard for comparison. Due to confidentiality restrictions, only 51 can be included in the report at this time. Plots were established on 08 May, 2015 on a Brookston clay loam sand spot phase soil at the Ridgetown Campus Research Farm. Based on soil nutrient analysis, additional phosphorous and potassium were not required, and no nitrogen was applied. No seed treatments were applied other than what was present when the seed came from the supplier. The peas were seeded at a rate of 1 375 000 plant/ha (550 000 plants/acre) into rows spaced at 18 cm (7") using a 12- row Wintersteiger double cone plot seeder. Seed lots for small plots were prepared by counting a reference sample with a seed counter and making additional samples based on weight. Separate 100 seed plots were established to determine percent emergence.

Weeds were controlled by a pre-plant incorporated application of Pursuit @ 0.312 L/ha

Plots were monitored as they matured by harvesting a subsample of 0.5 m x 6 rows per plot, combining the 4 samples (replicates), and shelling. Tenderometer readings were made using an F.M.C. pea tenderometer. A target tenderometer value of 105 psi was used to determine harvest date. At harvest, 2.0 m x 8 rows (2.88 m²) were harvested per plot, and shelled in a stationary pea sheller.

DATA COLLECTION: Emergence counts were taken within 1 month of seeding, and at harvest the following data was collected using the methodology described:

- a) days to harvest
- b) heat units - determined using a base temperature of 40° F
- c) adjusted heat units
- d) tenderometer - average of 2 readings per sample (plot)
- e) yield - lbs/acre
- f) adjusted yield – adjusted by 28 lb/ac for every tenderometer point above or below 105 psi
- g) canopy height - average of 2 measurements per plot at harvest
- h) sieve distribution - percentage weight distribution of different sieve sizes of an 800 g sample per plot. The sample is hand sieved through a set of steel sieves (Seedburo Equipment Co., Chicago, Ill). This data is not adjusted to a standard tenderometer value. Sieve sizes are defined as follows, according to USDA standards:

SIEVE SIZES OF PEAS

SIEVE SIZE	DIAMETER OF CIRCULAR OPENING IN MM (INCHES)	
	Will not pass through	Will pass through
1	-	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)

EXPERIMENTAL DESIGN AND DATA ANALYSIS: The trial was established as a randomized complete block design with 4 replications. A single plot consisted of 12 rows, 18 cm (7") apart, 8.0 m (36') in length.

The data was statistically analyzed using analysis of variance for a randomized complete block design. A protected LSD was used to separate the treatments with significant differences. Values followed by a similar letter do not differ statistically, based on a Type 1 error rate of 0.05.

DISCUSSION

The spring of 2015 was dry until 26 May, and afterward relatively wet. Regardless, emergence of this trial was good, and weed control was fair with many ragweed escapes. Separate plots with known numbers of seed are used for emergence counts.

The harvest season lasted 20 days and average adjusted yield across all varieties was 5031 lbs/acre which was better than 2014; the highest adjusted yield was 7035 lbs/acre. Average tenderometer value at harvest, averaged across all varieties was 111.5.

Table 1. Cultivars in 2015 Trial - Early Planting

	<u>Cultivar</u>	<u>Source</u>		<u>Cultivar</u>	<u>Source</u>
1	Salinero	Seminis	27	Avocette	Columbia
2	Spring	Seminis	28	433	Gallatin Valley
3	Sherwood	Seminis	29	2269	Gallatin Valley
4	Pizarro	Seminis	30	490	Gallatin Valley
5	Ice Pack	Seminis	31	518	Gallatin Valley
6	SV0956 QH	Seminis	32	Austin	Gallatin Valley
7	SV0955 QH	Seminis	33	Ricco	Gallatin Valley
8	Romance	Seminis	34	513	Gallatin Valley
9			35	435	Gallatin Valley
10	SV1391	Seminis	36	555	Gallatin valley
11	SV 0935 QF	Seminis	37	522	Gallatin Valley
12	SV 0969 QH	Seminis	38	BSC 2014	Brotherton
13	SV7401	Seminis	39	BSC 2414	Brotherton
14	Reliance	Seminis	40	BSC 5051	Brotherton
15	DA 1470	Seminis	41	BSC 2714	Brotherton
16	SV8112 QH	Seminis	42	Tomahawk	Crites Moscow
17	SV7688 QF	Seminis	43	Exp 26708	Crites Moscow
18	SV0371 QF	Seminis	44	Exp 26719	Crites Moscow
19	SV1036 QF	Seminis	45	Exp 36012	Crites Moscow
20	SV0893	Seminis	46	CS 436 AF	Crites Moscow
21	Maurice	Seminis	47	PLS M-14	Pure Line
22	Anubis	Lima Grain	48	PLS 226	Pure Line
23	BI403	Columbia	49	PLS 228	Pure Line
24	BI 2404	Columbia	50	Concept	Brotherton
25	BI2418	Columbia	51	Lil Mo	Seminis
26	Linnet	Columbia	52	Welland	Crites Moscow

Table 2: Maturity and emergence of pea cultivars - early planting. Ridgetown Campus, University of Guelph, 2015.

Cultivar	Days to Harvest	Pea Heat Units	Adjusted Pea Heat Units
Exp 36012	60	1423	1436
SV 0935 QF	62	1465	1450
555	67	1596	1559
SV0955 QH	58	1369	1377
Reliance	63	1487	1445
Anubis	59	1397	1383
490	62	1465	1432
522	66	1566	1540
513	65	1540	1544
SV 0969 QH	63	1487	1450
DA 1470	64	1513	1504
Romance	60	1423	1404
BSC 5051	64	1513	1540
BI403	68	1618	1608
518	64	1513	1488
BSC 2414	63	1487	1446
SV8112 QH	62	1465	1444
Ricco	65	1540	1509
SV0371 QF	63	1487	1455
Concept	67	1596	1576
Lil Mo	58	1396	1372
PLS 228	60	1423	1438
BI2418	67	1596	1583
Linnet	59	1397	1379
BSC 2714	64	1513	1469
Welland	65	1540	1521
SV0956 QH	55	1301	1282
BI 2404	68	1618	1571
PLS M-14	58	1369	1384
Exp 26719	59	1397	1381
SV7401	62	1465	1417
SV1391	63	1487	1447
SV7688 QF	65	1540	1510
Salinero	52	1229	1228
Spring	53	1256	1249
Austin	56	1321	1323

Table 2 (continued):**Maturity and emergence of pea cultivars - early planting.
Ridgetown Campus, University of Guelph, 2015.**

Cultivar	Days to Harvest	Pea Heat Units	Adjusted Pea Heat Units
Exp 26708	61	1442	1416
PLS 226	61	1442	1420
SV1036 QF	65	1540	1503
Ice Pack	54	1281	1270
435	57	1343	1319
Tomahawk	53	1256	1234
Sherwood	54	1281	1261
SV0893	63	1487	1413
433	53	1256	1249
Pizarro	53	1256	1229
BSC 2014	58	1369	1308
2269	57	1343	1310
Maurice	72	1736	1680
CS 436 AF	60	1423	1349
Avocette	65	1540	1499

Table 3: Yield and plant characteristics of pea cultivars - early planting. Ridgetown Campus, University of Guelph, 2015.

Cultivar	Tenderometer (psi)	Yield (lbs/acre)	Adjusted Yield (lbs/acre)	Canopy Height (cm)
Exp 36012	94	6853 a-d	7035 a	15 hij
SV 0935 QF	108	7035 abc	6825 ab	21 c-j
555	119	7297 a	6772 abc	23 c-j
SV0955 QH	96	6645 a-f	6757 abc	15 hij
Reliance	121	7129 ab	6541 a-d	22 c-j
Anubis	107	6604 a-f	6408 a-d	15 hij
490	117	6546 a-f	6080 a-e	15 ij
522	113	6312 a-f	5941 a-e	39 ab
513	98	5825 a-f	5881 a-e	25 b-j
SV 0969 QH	119	6391 a-f	5873 a-e	19 d-j
DA 1470	105	5905 a-f	5772 a-e	17 g-j
Romance	110	6037 a-f	5764 a-e	23 c-j
BSC 5051	87	5326 a-g	5704 a-e	17 g-j
Bl 403	105	5702 a-g	5562 a-f	23 c-j
518	113	5715 a-g	5365 a-f	21 c-j
BSC 2414	121	5916 a-f	5335 a-f	24 b-j
SV8112 QH	111	5615 a-g	5321 a-f	18 f-j
Ricco	116	5754 a-f	5320 a-f	24 b-j
SV0371 QF	116	5757 a-f	5302 a-f	31 a-h
Concept	110	5540 a-g	5260 a-f	15 ij
Lil Mo	99	5209 a-g	5247 a-f	23 c-j
PLS 228	92	5027 a-g	5242 a-f	23 c-j
Bl 2418	107	5382 a-g	5195 a-f	34 a-e
Linnet	109	5390 a-g	5138 a-f	28 a-j
BSC 2714	122	5720 a-f	5104 a-f	23 c-j
Welland	110	5253 a-g	4980 a-f	41 a
SV0956 QH	110	5207 a-g	4934 a-f	20 c-j
Bl 2404	124	5564 a-g	4902 a-f	30 a-i
PLS M-14	93	4692 a-g	4902 a-f	21 c-j
Exp 26719	108	5118 a-g	4894 a-f	30 a-i
SV7401 QH	124	5556 a-g	4877 a-f	12 j

**Table 3 (continued): Yield and plant characteristics of pea cultivars - early planting.
Ridgetown Campus, University of Guelph, 2015.**

Cultivar	Tenderometer (psi)	Yield (lbs/acre)	Adjusted Yield (lbs/acre)	Canopy Height (cm)
SV1391 QH	120	5434 a-g	4867 a-f	35 a-d
SV7688 QF	115	5287 a-g	4860 a-f	23 c-j
Salinero	101	4872 a-g	4851 a-f	20 d-j
Spring	104	4693 a-g	4595 a-f	20 d-j
Austin	99	4495 b-g	4523 a-f	25 b-j
Exp 26708	113	4818 a-g	4454 a-f	17 g-j
PLS 226	111	4759 a-g	4451 a-f	25 b-j
SV1036 QF	119	4935 a-g	4410 a-f	30 a-i
Ice Pack	106	4381 b-g	4220 a-f	36 abc
435	112	4553 a-g	4210 a-f	27 a-j
Tomahawk	111	4400 b-g	4085 a-f	33 a-f
Sherwood	110	4300 c-g	4013 a-f	20 c-j
SV0893 QF	137	5042 a-g	4006 a-f	42 a
433	104	3994 efg	3896 a-f	24 b-j
Pizarro	114	4127 d-g	3749 b-f	29 a-i
BSC 2014	131	4356 b-g	3495 c-f	18 e-j
2269	117	3902 fg	3440 def	27 a-j
Maurice	128	4196 d-g	3412 def	23 c-j
CS 436 AF	137	3942 efg	2899 ef	25 b-j
Avocette	121	2936 g	2362 f	32 a-g
LSD (P=.05)		1517.1	1789.2	8.6
CV		20.26	25.4	25.46
Treatment F		0.0001	0.0001	0.0001

Table 4: Percent pea size distribution - early planting. Ridgetown Campus, University of Guelph, 2015.

Cultivar	Sieve Size (size in mm/inches which the pea will not pass through)						
	1 -	2 (7.14/18/64)	3 (7.93/20/64)	4 (8.72/22/64)	5 (9.52/24/64)	6 (10.31/26/64)	> 6
Exp 36012	0.1	0.9	4.2	13.1	66	15.1	0.4
SV 0935 QF	0.4	2.6	22.1	53.6	20.3	1.1	0.1
555	0.2	0.8	8.9	54.8	34.6	0.6	0
SV0955 QH	0.8	2.8	8.1	20.5	36.5	27.1	4.2
Reliance	0.3	2.1	16.7	56.3	23.2	1.3	0.2
Anubis	0.2	1.3	4.8	16.8	44.5	29.9	2.4
490	0.2	0.6	4	17.6	51.1	26.3	0.2
522	0.3	0.9	5.3	21.4	47.4	22.3	2.3
513	1	3.5	11.9	26.3	42.6	13.9	0.9
SV 0969 QH	0.9	3.9	21.6	52.5	20.9	0.3	0
DA 1470	0.2	1.5	12.9	62.3	22.5	0.5	0
Romance	0.2	0.5	3.8	16	56.9	21.9	0.7
BSC 5051	0.6	2.3	11.9	36.1	46.6	2.5	0
Bl403	0.5	1	6.5	28	55.3	8.8	0.1
518	0.7	2.1	9.3	34.5	48.5	4.9	0.1
BSC 2414	0.1	0.9	6.1	23.5	48.5	19.9	0.9
SV8112 QH	0.5	4.8	32	53.4	9.1	0.3	0
Ricco	0.4	1	5.1	21.4	52.6	18.8	0.7
SV0371 QF	1.5	5.9	30.3	57.5	4.4	0.4	0.1
Concept	0.5	1.4	7.4	27.8	55.5	7.2	0.2
Lil Mo	1.5	5.7	20.2	62.4	10.2	0	0
PLS 228	0.2	1.9	9.7	30.6	52.9	4.4	0.1
Bl2418	0.6	1.7	7.1	20.1	58	12.2	0.2
Linnet	3.6	11.3	64.3	20.1	0.6	0.1	0
BSC 2714	0.6	2.9	13.8	47.9	34	0.6	0
Welland	1.2	4.4	25.5	64.7	4	0.2	0
SV0956 QH	1.1	3.2	10.4	31.7	40.8	12.1	0.8
Bl 2404	0.7	1.7	9.5	29.2	49.1	9.8	0
PLS M-14	0.2	1.1	6.5	21.5	56.8	13.5	0.4
Exp 26719	0.3	1.5	6.3	24.4	62	5.5	0.1
SV7401	0.8	6.8	34.2	44.8	12.3	1.1	0.1

Table 4 (continued):

Percent pea size distribution - early planting. Ridgetown Campus, University of Guelph, 2015.

Cultivar	Sieve Size (size in mm/inches which the pea will not pass through)						
	1 -	2 (7.14/18/64)	3 (7.93/20/64)	4 (8.72/22/64)	5 (9.52/24/64)	6 (10.31/26/64)	> 6
SV1391	0.4	2.4	15.8	40	37.1	4.1	0.1
SV7688 QF	0.6	2.4	15	50.1	29.8	2	0
Salinero	0.6	1.8	7.4	23	50.2	15.7	1.4
Spring	0.1	0.3	1.2	6.4	29.3	49.8	12.9
Austin	0	0.4	2.5	13.2	59.8	23.4	0.7
Exp 26708	0.6	1.8	7.6	28.5	53	8.5	0
PLS 226	0.4	2.1	15.8	25	49.7	6.9	0.1
SV1036 QF	1.4	3.4	4.3	10.2	37.4	40.3	3
Ice Pack	0.2	0.9	4.8	18.5	57.3	17.7	0.8
435	0.1	0.6	2.7	13.6	46.7	34	2.4
Tomahawk	0.1	0.6	4.3	20.8	56.1	16.6	1.6
Sherwood	0.2	1.2	4.1	16.2	45.5	30.3	2.5
SV0893	0.1	1.1	11.2	59.1	27.9	0.6	0
433	0.3	0.9	3.7	13.2	45.8	33.8	2.4
Pizarro	0.2	0.6	2	10.5	37.6	43.6	5.5
BSC 2014	0.3	1.8	8.7	35.4	51.3	2.5	0.1
2269	0.1	0.6	2.5	11.2	43.2	40.3	2
Maurice	1.2	5.1	22.7	52.9	17.7	0.5	0
CS 436 AF	0.1	0.6	3.8	18.8	61.8	14.5	0.4
Avocette	8.7	48.5	39.6	2.2	1	0.1	0.1