

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

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METHODS: Fifty pea cultivars were submitted to the 2015 trial, with Spring included as a standard for comparison. Plots were established on 29 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, and 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 – 28 lb/ac per tenderometer point above/below target
- 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

By late May, conditions were wet and temperatures were normal. The site was a good when planting, and emergence was good. Weed control was good with a few ragweed escapes. Separate plots with known numbers of seed are used for emergence counts

The harvest season lasted 14 days and average adjusted yield across all varieties was 5860 lbs/acre. The highest adjusted yield was 7401 lbs/acre. Average tenderometer value at harvest, averaged across all varieties was 118 psi.

Table 1. Cultivars in 2015 Trial - Late Planting

<u>Cultivar</u>	<u>Source</u>	<u>Cultivar</u>	<u>Source</u>
1 Spring	Seminis	26 Linnet	Columbia
2 Sherwood	Seminis	27 Avocette	Columbia
3 SV0956 QH	Seminis	28 BSC 5191	Brotherton
4 Cresendo	Seminis	29 BSC 9110	Brotherton
5 PA0826	Seminis	30 BSC-5814	Brotherton
6 SV0955 QH	Seminis	31 Realm	Lima Grain
7 Romance	Seminis	32 Terrain	Lima Grain
8 SV1391 QH	Seminis	33 CS-446 AF	Crites Moscow
9 Lil'Mo	Seminis	34 CS-439 AF	Crites Moscow
10 SV0935QF	Seminis	35 EXP 36055	Crites Moscow
11 SV7401QH	Seminis	36 EXP 26751	Crites Moscow
12 522	Seminis	37 Trinity	Crites Moscow
13 Nitro	Seminis	38 CS-454 AF	Crites Moscow
14 Reliance	Seminis	39 PLS 179	Pure Line
15 SV8112 QH	Seminis	40 PLS 167	Pure Line
16 Ambiance	Seminis	41 PLS 196	Pure Line
17 DA1470	Seminis	42 PLS 183	Pure Line
18 SV7688 QF	Seminis	43 522	Gallatin Valley
19 SV0371 QF	Seminis	44 555	Gallatin Valley
20 SV1036 QF	Seminis	45 Ricco	Gallatin Valley
21 SV0893 QF	Seminis	46 513	Gallatin Valley
22 Maurice	Seminis	47 2278	Gallatin Valley
23 Bl 403	Columbia	48 506	Gallatin Valley
24 Bl 2404	Columbia	49 Welland	Crites Moscow
25 Bl 2418	Columbia	50 Concept	Botherton

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

Cultivar	Days to Harvest	Emergence (%)	Pea Heat Units	Adjusted Pea Heat Units
Lil'Mo	59	61	1474	1452
SV0893 QF	66	75	1679	1639
BI 403	64	86	1624	1637
PLS 179	64	70	1624	1626
Reliance	61	69	1533	1477
Trinity	65	73	1652	1593
SV7401QH	59	49	1474	1460
SV0955 QH	60	63	1502	1424
522	61	65	1533	1492
Spring	55	70	1355	1323
CS-446 AF	64	74	1624	1602
BSC-5814	65	74	1652	1629
CS-454 AF	59	80	1474	1456
PLS 196	66	70	1679	1639
SV8112 QH	61	63	1533	1441
BSC 9110	65	78	1652	1598
SV0935QF	61	75	1533	1487
Sherwood	54	77	1333	1320
Concept	65	56	1652	1613
Realm	64	83	1624	1592
SV1036 QF	62	77	1564	1535
SV1391 QH	61	66	1533	1481
SV0371 QF	61	71	1533	1510
PLS 183	67	59	1708	1691
506	61	77	1533	1545
513	62	76	1564	1562
555	63	75	1594	1565
PLS 167	62	82	1564	1508
Ambiance	66	70	1679	1629
Maurice	68	73	1736	1737
Ricco	62	83	1564	1539
Romance	60	67	1502	1426
CS-439 AF	64	67	1624	1617
Cresendo	56	71	1383	1385
BI 2404	64	94	1624	1573
BI 2418	65	62	1652	1629
EXP 26751	65	85	1652	1587
BSC 5191	62	78	1564	1541

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

Cultivar	Days to Harvest	Emergence (%)	Pea Heat Units	Adjusted Pea Heat Units
SV7688 QF	64	72	1624	1530
DA1470	62	60	1564	1536
Linnet	60	80	1502	1389
PA0826	56	72	1383	1347
EXP 36055	64	78	1624	1575
Welland	63	53	1594	1562
2278	63	67	1594	1565
522	63	79	1594	1533
Terrain	65	78	1652	1666
SV0956 QH	55	56	1355	1321
Nitro	62	61	1564	1508
Avocette	62	73	1564	1548

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

Cultivar	Tenderometer (psi)	Yield (lbs/acre)	Adjusted Yield (lbs/acre)	Canopy Height (cm)
Lil'Mo	111	7716 a	7401 a	29 e-m
SV0893 QF	120	7758 a	7201 ab	24 g-m
Bl 403	94	6826 a-d	7008 ab	23 h-m
PLS 179	99	6956 abc	6977 abc	40 c-m
Reliance	128	7656 a	6869 a-d	45 c-g
Trinity	130	7504 ab	6675 a-d	31 d-m
SV7401QH	107	6850 a-d	6647 a-d	22 i-m
SV0955 QH	139	7727 a	6635 a-d	23 h-m
522	121	7180 abc	6606 a-d	22 j-m
Spring	116	7033 abc	6589 a-d	26 f-m
CS-446 AF	111	6854 a-d	6549 a-d	30 d-m
BSC-5814	112	6862 abc	6537 a-d	20 lm
CS-454 AF	109	6504 a-d	6252 a-d	42 c-k
PLS 196	120	6818 a-d	6251 a-d	23 h-m
SV8112 QH	146	7384 ab	6099 a-d	43 c-i
BSC 9110	127	6822 a-d	6070 a-d	22 i-m
SV0935QF	123	6693 a-d	6052 a-d	48 cde
Sherwood	106	6229 a-d	6051 a-d	27 e-m
Concept	120	6597 a-d	6044 a-d	20 m
Realm	116	6490 a-d	6042 a-d	21 j-m
SV1036 QF	114	6378 a-d	5976 a-d	34 d-m
SV1391 QH	126	6645 a-d	5921 a-d	45 c-g
SV0371 QF	112	6207 a-d	5878 a-d	41 c-l
PLS 183	109	6102 a-d	5857 a-d	22 i-m
506	94	5671 a-d	5842 a-d	69 a
513	101	5868 a-d	5840 a-d	21 klm
555	115	6222 a-d	5816 a-d	34 d-m
PLS 167	128	6594 a-d	5803 a-d	25 f-m
Ambiance	125	6468 a-d	5761 a-d	66 ab
Maurice	100	5726 a-d	5736 a-d	25 g-m
Ricco	112	6047 a-d	5700 a-d	24 g-m
Romance	138	6754 a-d	5694 a-d	26 f-m
CS-439 AF	104	5771 a-d	5673 a-d	46 c-f
Cresendo	99	5621 a-d	5645 a-d	39 c-m
Bl 2404	126	6297 a-d	5581 a-d	33 d-m

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

Cultivar	Tenderometer (psi)	Yield (lbs/acre)	Adjusted Yield (lbs/acre)	Canopy Height (cm)
BI 2418	112	5866 a-d	5544 a-d	55 abc
EXP 26751	133	6451 a-d	5534 a-d	37 c-m
BSC 5191	112	5855 a-d	5533 a-d	24 g-m
SV7688 QF	147	6809 a-d	5486 a-d	29 e-m
DA1470	114	5780 a-d	5391 a-d	42 c-j
Linnet	156	6834 a-d	5258 a-d	27 e-m
PA0826	118	5712 a-d	5208 a-d	29 e-m
EXP 36055	124	5849 a-d	5166 a-d	22 j-m
Welland	116	5610 a-d	5155 a-d	64 ab
2278	115	5496 a-d	5086 a-d	38 c-m
522	131	5859 a-d	5002 a-d	51 bcd
Terrain	93	4556 cd	4757 a-d	25 g-m
SV0956 QH	117	4945 bcd	4465 bcd	20 lm
Nitro	128	4906 bcd	4119 cd	30 d-m
Avocette	108	4234 d	4003 d	44 c-h
LSD (P=.05)		1433	1567.9	11.5
CV		16.11	19.11	24.76
Treatment Prob(F)		0.0001	0.0095	0.0001

Table 4: Percent pea size distribution - late 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
Lil'Mo	5.1	11	52.6	28.5	2.8	0	0
SV0893 QF	0.1	0.5	2.6	13.9	63.6	19	0.4
BI 403	0.4	1	4.8	13.2	33.6	40.3	6.8
PLS 179	0.2	0.7	6	23.6	59.4	9.9	0.2
Reliance	0.5	2.3	14.4	46.9	33.3	2.5	0.1
Trinity	0.2	1	5.9	23.1	59.5	10.3	0
SV7401QH	3.2	9.5	37.7	36.5	11.1	1.7	0.2
SV0955 QH	0.7	1.6	7.7	23.5	40.6	21.6	4.4
522	1.2	3	13	41.6	38.7	2.4	0
Spring	0.2	0.4	2.8	11.4	37.3	42.4	5.5
CS-446 AF	1.4	5.6	20.7	48.3	23.3	0.7	0
BSC-5814	0.1	0.7	4.8	18.2	52.1	22.7	1.4
CS-454 AF	1.1	2.2	9.2	35.2	46	6.2	0.1
PLS 196	0.1	0.7	4	15.2	49.4	28.4	2.1
SV8112 QH	0.5	1.3	10.4	58.8	27.7	1.3	0
BSC 9110	0.1	0.7	3.4	15.8	51.7	26.1	2.2
SV0935QF	0.9	1.9	9.4	43	42.4	2.4	0
Sherwood	0.8	3.2	12.8	28.2	40.3	13.8	0.9
Concept	0.2	0.7	3.8	15.3	50.6	27.5	1.9
Realm	0.2	0.8	4.2	17.2	63.1	14.5	0
SV1036 QF	0.1	0.5	2.7	12.3	47.7	33.5	3.2
SV1391 QH	0.5	1.8	10.4	39.9	41	6.3	0.1
SV0371 QF	1.7	6.8	30.7	52.2	8.6	0	0
PLS 183	0.3	1	3.5	12	39.1	41.3	2.8
506	0.7	2.8	11.3	31.6	43.7	9.3	0.5
513	0.3	1.7	7.7	23.5	48.1	17.1	1.7
555	1.4	5.8	21.9	48	22.3	0.6	0
PLS 167	0.6	2.1	16.6	73.8	6.7	0.1	0
Ambiance	5.1	22.1	67.1	3.4	1.9	0.3	0
Maurice	0.7	3.4	14.8	42.2	37.5	1.3	0
Ricco	0.3	0.6	3.5	12.8	44.2	34.5	4.1

Table 4 (continued):

Percent pea size distribution - late 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
Romance	0.4	0.7	4.2	21	59.5	14	0.2
CS-439 AF	2.9	12.3	49	33.9	1.6	0.3	0
Cresendo	7	20.2	48.8	23.1	0.8	0	0
Bl 2404	0.2	1.1	5.7	17.8	47.7	24.7	2.9
Bl 2418	0.4	1.5	7.1	21.3	50.3	18.3	1
EXP 26751	1.1	6.3	36.4	54.4	1.7	0.1	0
BSC 5191	0.3	1.3	5.1	18.1	51.5	21.1	2.6
SV7688 QF	0.5	1	7.8	37	46.7	6.3	0.8
DA1470	0.6	2.5	7.3	28.6	51.8	8.9	0.3
Linnet	0.6	4.9	72.9	15.4	2.1	3.2	0.9
PA0826	2.3	9.1	26.5	41.2	18.9	2	0
EXP 36055	0.3	1.3	8.2	31.6	55.6	2.9	0
Welland	1.4	6.2	29.7	58.1	4.7	0	0
2278	0.6	1.8	6.7	21.5	54.1	15.1	0.1
522	0.5	1.5	6.3	21.8	47.4	21	1.5
Terrain	0.1	0.2	2.7	13.5	55.6	27.1	0.8
SV0956 QH	1.2	4.5	14.3	32	38	9.7	0.3
Nitro	4.3	17.9	68.7	7.5	1.3	0.3	0
Avocette	5.1	22.9	65.8	3.7	2.3	0.4	0