

TITLE OF PROJECT: 2006 Processing Pea Cultivar Evaluation

PEA06-1

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METHODS: Thirty-two pea cultivars were submitted to the 2006 trial, with Spring and Encore included as standards for comparison. Plots were established on 06 May 2006 on a Brookston clay loam sand spot phase soil at the Ridgetown College 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 (240 g/l).

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 100 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 - adjusted by 2 heat units for every tenderometer point above or below 100. This correction was made for each plot, rather than for plot means.
- d) tenderometer - average of 2 readings per sample (plot)
- e) yield - lbs/acre
- f) adjusted yield - yields were adjusted by 28 lbs for every tenderometer point above or below 100 (Dr. Earl Gritton, University of Wisconsin). This correction was made for each plot, rather than for plot means.
- 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 2006 started off with cool weather and adequate moisture resulting in uniform emergence and good stands. Moisture through the season was more uniform and temperature were more moderate than previous years. Weed control was good, with few ragweed escapes. Diseases were not present.

The harvest season lasted 15 days and average adjusted yields across all cultivars were double the previous year at 7039 lbs/acre. We harvested at lower tenderometer values than previous years, with the average across all cultivars being 90 psi. An extra category was included in the seive size distribution table (> 6) as a few cultivars had a significant percentage of peas greater than a seive size of 6.

Table 1. Cultivars in 2006 Trial

	<u>Cultivar</u>	<u>Source</u>
1	08220679	Seminis
2	Spring*	Seminis
3	08530726	Seminis
4	Ice Pack	Seminis
5	Pendleton	Seminis
6	08530731	Seminis
7	08540794	Seminis
8	Cabaret	Advanta
9	Zodiac	Advanta
10	Reveille	Advanta
11	Meridian	Advanta
12	Tommy	Advanta
13	Chinook	Advanta
14	PLS 97	Pure Line
15	PLS 11	Pure Line
16	PLS 23	Pure Line
17	PLS 182	Pure Line
18	PLS 1	Pure Line
19	PLS 144	Pure Line
20	PLS 183	Pure Line
21	BSC 328	Brotherton
22	BSC 348	Brotherton
23	BSC 364	Brotherton
24	BSC 728	Brotherton
25	BSC 7532	Brotherton
26	BSC 610	Brotherton
27	CMG 397	Crites Moscow
28	CMG 406	Crites Moscow
29	CMG 52221	Crites Moscow
30	CMG 52210	Crites Moscow
31	CMG 395	Crites Moscow
32	CMG 389	Crites Moscow
33	Sangria	Advanta
34	Encore**	Seminis

*,** - early and main season standard cultivars

Table 2: Maturity of pea cultivars. Ridgetown College, 2006.

Cultivar	Days to Harvest	Pea Heat Units	Pea Heat Units Adjusted	Emergence (%)
BSC 348	62	1304	1337	91
BSC 610	65	1395	1413	96
BSC 364	64	1367	1366	97
CMG 395	63	1336	1363	88
CMG 389	59	1224	1238	90
CMG 397	59	1224	1253	92
PLS 97	66	1414	1427	99
PLS 11	59	1224	1266	100
Encore	65	1395	1411	89
Tommy	65	1395	1432	91
08220679	58	1195	1215	95
BSC 328	60	1248	1270	92
Meridian	64	1367	1380	93
08530731	65	1395	1402	94
BSC 728	66	1414	1437	94
08540794	65	1395	1410	96
08530726	65	1395	1423	95
PLS 1	59	1224	1226	95
Zodiac	66	1414	1455	92
PLS 23	59	1224	1262	90
CMG 52221	66	1414	1453	92
CMG 52210	64	1367	1372	91
Pendleton	65	1395	1394	93
CMG 406	70	1516	1536	91
PLS 182	68	1457	1497	93
Sangria	67	1434	1468	94
Cabaret	64	1367	1385	92
BSC 7532	66	1414	1451	89
Spring	55	1113	1154	88
PLS 144	66	1414	1434	97
Chinook	64	1367	1344	97
PLS 183	70	1516	1502	90
Reveille	55	1113	1146	87
Ice Pack	58	1195	1187	89

Table 3: Yield and plant characteristics of pea cultivars. Ridgetown College, 2006.

Cultivar	Tenderometer (psi)	Yield (lbs/acre)	Adjusted Yield (lbs/acre)	Canopy Height (cm)	Node Count
BSC 348	84	8668.6 a	9131 a	15.8 lm	9.7
BSC 610	91	8298.1 abc	8543 ab	18.0 j-m	13.9
BSC 364	101	8441.0 ab	8424 abc	22.8 f-m	11.5
CMG 395	87	7932.2 a-e	8307 a-d	28.0 e-k	9.4
CMG 389	93	8050.4 a-d	8250 a-e	36.1 cde	10.1
CMG 397	86	7757.8 a-g	8164 a-e	39.9 bcd	9.5
PLS 97	94	7813.7 a-f	7992 a-f	13.9 m	11
PLS 11	79	7324.0 b-i	7905 a-f	38.1 b-e	9.3
Encore	92	7572.1 a-h	7789 a-g	17.5 j-m	12
Tommy	82	7007.9 c-k	7526 b-h	27.3 e-l	12.6
08220679	90	7183.9 b-j	7457 b-h	38.1 b-e	8
BSC 328	89	7032.0 c-k	7340 b-h	34.4 c-f	7.7
Meridian	94	7117.6 b-j	7293 b-i	28.0 e-k	16.1
08530731	96	7126.2 b-j	7228 b-i	14.3 m	11.8
BSC 728	89	6879.2 d-k	7198 b-i	31.8 d-h	12.7
08540794	93	6899.8 d-k	7103 c-i	19.8 i-m	9.9
08530726	86	6630.1 e-k	7022 c-i	27.0 e-l	14.4
PLS 1	99	6927.6 d-k	6952 d-i	38.5 b-e	20.2
Zodiac	79	6344.5 h-l	6922 d-i	20.5 g-m	14.7
PLS 23	81	6342.0 h-l	6867 e-i	52.6 a	10.3
CMG 52221	81	6140.5 i-l	6680 f-i	20.0 h-m	13.8
CMG 52210	98	6589.0 e-k	6655 f-i	15.5 lm	11.6
Pendleton	101	6476.3 f-k	6462 g-j	20.0 h-m	14.2
CMG 406	90	6153.2 i-l	6430 g-j	32.0 c-g	14.5
PLS 182	80	5848.5 j-m	6401 g-j	17.3 klm	16
Sangria	83	5781.0 j-m	6260 h-k	47.5 ab	15.6
Cabaret	91	6005.7 i-m	6251 h-k	16.1 lm	11.8
BSC 7532	82	5711.4 klm	6222 h-k	33.8 c-f	14.2
Spring	79	5634.8 klm	6212 h-k	20.0 h-m	8.4
PLS 144	90	5931.0 i-m	6211 h-k	30.5 d-i	14.3
Chinook	112	6428.7 g-k	6100 h-k	29.3 d-j	14.5
PLS 183	107	6074.4 i-m	5878 ijk	20.3 h-m	13.8
Reveille	83	4764.4 m	5230 jk	30.0 d-i	8.8
Ice Pack	104	5017.5 lm	4909 k	43.4 abc	8.9
LSD (0.05)	-	1129.4	1162	9.7	-
CV	-	11.9	11.8	25.3	-
P-value	-	0.0001	0.0001	0.0001	-

Table 4: Percent pea size distribution. Ridgetown College, 2006

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
BSC 348	0.6	2.5	12.8	31.5	39.4	11.1	2.2
BSC 610	1.1	1.7	6.3	29.6	52.9	8.2	0.1
BSC 364	0.3	0.9	6.1	33.3	56.2	3.2	0
CMG 395	0.7	2.6	14.7	37.6	39.8	4.6	0
CMG 389	0.7	2	6.4	18.5	45.3	26.7	0.5
CMG 397	0.7	1.9	5.6	14.8	28.2	37.2	11.6
PLS 97	0.9	2.1	7.8	30.9	48.2	10.1	0
PLS 11	0.9	4	14.7	27.4	39	13.8	0.1
Encore	0.8	2.2	9.9	35.1	42.1	9.8	0.1
Tommy	0.9	6.2	32.2	54.2	6.3	0.2	0
08220679	5.1	10.8	27.1	42.8	14	0.3	0
BSC 328	1.2	5	17.1	30.8	38.7	7	0.2
Meridian	1.4	2.5	11	32.1	47.7	5.3	0
08530731	0.6	5.9	28.8	49.6	14.7	0.4	0
BSC 728	0.8	5.2	32.4	51.8	9.6	0.2	0
08540794	0.5	1.2	15.8	51.1	31	0.5	0
08530726	1.2	8.1	34.3	49.4	6.9	0	0
PLS 1	0.7	1.6	3.6	10.3	32.6	48.1	3.1
Zodiac	1.4	8.6	34.6	47.1	8.2	0.2	0
PLS 23	1.6	7.6	19.7	34.8	33.1	3.3	0
CMG 52221	1.2	6.5	29.7	49.2	13.4	0	0
CMG 52210	1	1.3	11.3	49.4	35.9	1.1	0
Pendleton	0.8	1.6	7.4	33.9	46.1	10	0.3
CMG 406	1.1	1.7	5.8	19.8	59.5	12.2	0
PLS 182	0.4	1.1	9.8	39.1	43.9	5.6	0
Sangria	2.7	14	60.3	23	0.1	0	0
Cabaret	1.6	5.4	29.4	51.7	11.7	0.2	0
BSC 7532	0.5	4.6	23.4	49.8	21.3	0.5	0
Spring	0.4	0.7	3.3	27.3	49.2	18.6	0.5
PLS 144	0.7	4.2	28.1	51.1	15.7	0.2	0
Chinook	0.8	3	14.4	44.6	36.8	0.5	0
PLS 183	0.7	1	2.8	8.3	29.3	50	7.9
Reveille	2	7.1	25.8	39.5	23	2.7	0
Ice Pack	0.9	3	6.5	22	50.1	17.3	0.3