

**UNIVERSITY OF
DELAWARE**



LIMA BEAN

VARIETY

TRIAL

RESULTS

Ed Kee and Emmalea Ernest

**University of Delaware
Research and Education Center
16483 County Seat Highway
Georgetown, DE 19947**

2007

2007 University of Delaware Lima Bean Variety Trial

Ed Kee and Emmalea Ernest

University of Delaware Research and Education Center

16483 County Seat Highway

Georgetown, DE 19947

(302) 856-7303 kee@udel.edu emmalea@udel.edu

The 2007 Lima Bean Variety Trial included 17 varieties from two participating companies: ADM Edible Bean Specialties, Inc. and Ben Fish & Son. The purpose of this trial is to evaluate new processing lima bean varieties for yield, maturity, and quality under Delaware growing conditions.

Varieties Entered in the 2007 Delaware Lima Bean Variety Trail

Variety Name	Days to Maturity	Company
GBL 21-04-DA	81	Ben Fish
GBL 23-04-DA	76	Ben Fish
GBL 24-04-DA	81	Ben Fish
GBL 26-04-DA	78	Ben Fish
GBL 27-04-DA	81	Ben Fish
C-elite Select	81	Ben Fish
184-85	81	Ben Fish
G200385	94	ADM Research
G200382	92	ADM Research
G200430	92	ADM Research
G200476	94	ADM Research
LD4	92	ADM Research
G418267	94	ADM Research
G423273	91	ADM Research
Cypress	92	ADM Seedwest
Maestro	91	ADM Seedwest
Meadow	92	ADM Seedwest

Location:

Field 21-A at the University of Delaware Research and Education Center Farm, Georgetown, DE

Cultural Practices:

The trial was planted on June 7, 2007 with a Monosem planter. Varieties were planted in one-row plots with 30 inch between row spacing and 3 inch in-row spacing. Plots were 25 feet in length. Plots were arranged in a randomized complete block design with four replications. The field was fertilized according to soil test results. Ridomil Gold PC GR, at a rate of 13 lbs/A, was applied at planting. Pre-emergence herbicides (0.75 oz./A Sandea +0.5 pints/A Dual II Magnum) and nitrogen (12 gal/A 30% UAN) were applied on June 9, 2007. Plots were cultivated on July 13, 2007 and July 20, 2007. Plots were irrigated, when necessary, with a traveling, linear system. No applications were made for insect or disease control.

Harvest:

As harvest approached, five-plant samples were pulled from the maturing varieties and the number of full, flat and dry pods was counted. This data is presented in Table 1. Varieties were harvested as close to ten percent dry pods as possible. All replications for a variety were harvested on the same day. Harvest began on August 20 (74 DAP) and ended on August 31 (85 DAP).

A 10-foot section from each plot was harvested. The plants were cut off at soil level, weighed, and the pods pulled off by hand and counted as full, flat or dry. The beans were shelled from the full and dry pods in a Taylor Manufacturing Company, TaMaCo Huller, Model 520. Trash was removed from the shelled beans by hand, and the cleaned beans were weighed to determine yield.

Results and Discussion

Yield did not differ significantly among the varieties as shown in Table 2. The standard varieties Cypress and C-elite Select were among the highest yielding varieties. Unlike in past years, there were no significant differences in stand count between the varieties (Table 3). Also, flowering seemed to be more synchronized than in past years (Table 4). Both of these factors may have contributed to differences in yield in past years.

Acknowledgements

The authors gratefully acknowledge the assistance of James Adkins, Brian Hearn and the REC Farm Crew.

Table 1. Percent Full, Flat and Dry Pods from Pre-Harvest Samples and from the Final Harvest

	20-Aug (74)	21-Aug (75)	23-Aug (77)	24-Aug (78)	27- Aug (81)	28-Aug (82)	29-Aug (83)	30-Aug (84)	31-Aug (85)
	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry	% full, flat & dry
Maestro	65 31 5								
Meadow	68 27 5								
LD4	74 21 5								
G423273		84 9 8	91 2 7	82 8 10					
G200382		50 48 2	68 22 10		60 4 36 55 7 38				
Cypress		69 27 4	69 25 6	57 40 3	74 12 15 61 7 32				
G418267		72 25 3	63 36 2		63 14 23 69 7 24				
G200430						57 21 22			
G200385		41 57 2			88 7 6	70 13 17			
GBL 23-04-DA					54 0 46	72 20 8			
GBL 26-04-DA					74 5 21	78 14 8			
G200476					75 13 12		65 11 23		
C-elite Select					64 18 18		71 13 16		
GBL 27-04-DA					58 11 31		77 12 11		
GBL 21-04-DA					66 24 10			69 19 12	
GBL 24-04-DA					80 8 12			70 22 8	
184-85					71 29 0				66 28 6

Note: Numbers in bold are from the final harvest data (10 ft plots, 4 replications), other numbers are from a 5-plant sample from one replication.

Table 2. Yield, Days to Harvest, Maturity at Harvest, Plant Weight and Stand Counts for Entries in the 2007 Lima Bean Variety Trial

Trt#	Variety	Days to Harvest	Yield (Lbs/A)	% Full	% Flat	% Dry	Plant Weight (Lbs/10ft)	# Plants/10ft
4	GBL 26-04-DA	82	3565 a	78 ab	14 cde	8 ef	13.8 abc	36.5 a
9	G200382	81	3463 a	55 e	7 e	38 a	10.7 def	35.8 a
15	Cypress	81	3381 a	61 de	7 e	32 ab	10.2 ef	36.0 a
6	C-elite Select	83	3190 a	71 bcd	13 cde	16 cdef	14.2 ab	34.5 a
5	GBL 27-04-DA	83	3029 a	77 ab	12 de	11 def	13.0 abcd	32.0 a
1	GBL 21-04-DA	84	3016 a	69 bcd	19 bcd	12 cdef	13.8 abc	35.8 a
13	G418267	81	2983 a	69 bcd	7 e	24 bc	10.8 def	33.3 a
2	GBL 23-04-DA	82	2799 a	72 abcd	20 bcd	8 ef	14.9 a	35.8 a
3	GBL 24-04-DA	84	2748 a	70 bcd	22 abc	8 ef	14.9 a	36.3 a
8	G200385	82	2720 a	70 bcd	13 cde	17 cde	11.5 cdef	32.0 a
11	G200476	83	2714 a	65 cde	11 de	23 bc	11.0 def	35.5 a
17	Meadow	74	2612 a	68 bcd	27 ab	5 ef	12.9 abcd	33.8 a
14	G423273	78	2533 a	82 a	8 e	10 def	9.4 f	29.5 a
12	LD4	74	2528 a	74 abc	21 abcd	5 ef	12.2 bcde	29.5 a
10	G200430	82	2491 a	57 e	21 abcd	22 bcd	11.7 cde	30.0 a
16	Maestro	74	2435 a	65 cde	31 a	5 f	12.9 abcd	33.3 a
7	184-85	85	2224 a	66 cde	28 ab	6 ef	12.9 abcd	30.5 a
	LSD		NA	0.0003	10.28	12.594	2.3025	NA
	P-value		0.057	10.618	<0.0001	<0.0001	<0.0001	0.0604

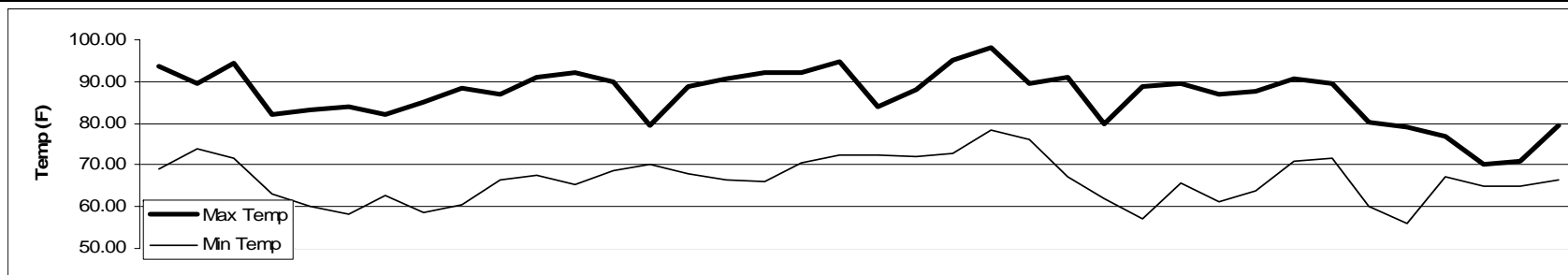
Table 3. Stand Counts for Each Entry in the 2007 Lima Bean Variety Trial on July 11, 2007 (34 DAP)

Variety Name	Plants/Yard ¹
C-elite Select	11.75 a
G200385	11.50 a
Cypress	11.50 a
GBL 24-04-DA	10.75 a
Meadow	10.75 a
GBL 21-04-DA	10.50 a
G200382	10.50 a
LD4	10.50 a
Maestro	10.50 a
GBL 23-04-DA	10.25 a
GBL 26-04-DA	10.25 a
184-85	9.75 a
G200430	9.75 a
G200476	9.75 a
G418267	9.75 a
G423273	9.75 a
GBL 27-04-DA	9.00 a

¹p-value for stand count = 0.3886, means followed by the same letter are not significantly different

Table 4. Days to Flowering for Entries in the 2007 Lima Bean Variety Trial

Variety (ordered by yield)	Days After Planting (Flowering was evaluated on starred days.)																					
	*					*					*				*		*		*			
	40		45			50			55			60			65			70			75	
GBL 26-04-DA																						
G200382																						
Cypress																						
C-elite Select																						
GBL 27-04-DA																						
GBL 21-04-DA																						
G418267																						
GBL 23-04-DA																						
GBL 24-04-DA																						
G200385																						
G200476																						
Meadow																						
G423273																						
LD4																						
G200430																						
Maestro																						
184-85																						



=no flowering
 =first flowers
 =increasing flower
 =increasing/full flower
 =full/decreasing flowers
 =decreasing flowers

**Appendix A: Weather Data for 2007 Lima Variety Trial
June 7th (planting) to August 31st (final harvest)**

DAP	Date	Max Temp °F	Min Temp °F	Rainfall (in.)	Max Soil Temp °F	Min Soil Temp °F
0	7-Jun	84.6	52.4	0.00	82.2	65.4
1	8-Jun	94.5	67.8	0.00	87.5	71.9
2	9-Jun	87.0	64.9	0.00	87.7	75.7
3	10-Jun	75.9	60.2	0.00	80.9	73.0
4	11-Jun	81.5	59.2	0.10	82.7	71.5
5	12-Jun	86.5	61.4	0.03	85.6	70.5
6	13-Jun	75.4	59.5	0.01	79.7	70.3
7	14-Jun	63.5	56.1	0.01	70.3	66.9
8	15-Jun	69.0	56.7	0.00	72.3	66.0
9	16-Jun	77.5	60.4	0.00	81.1	67.2
10	17-Jun	87.7	60.8	0.00	87.9	67.7
11	18-Jun	90.1	66.0	0.00	86.4	72.7
12	19-Jun	92.4	65.8	0.00	91.7	73.5
13	20-Jun	79.9	61.5	0.18	80.7	71.9
14	21-Jun	83.1	58.0	0.00	90.5	66.9
15	22-Jun	79.8	57.9	0.00	90.3	70.8
16	23-Jun	78.6	50.8	0.00	90.3	67.5
17	24-Jun	83.6	56.1	0.00	90.9	69.7
18	25-Jun	82.8	64.7	0.32	85.9	73.5
19	26-Jun	91.5	70.0	0.00	93.7	75.1
20	27-Jun	93.4	71.2	0.78	96.1	77.4
21	28-Jun	90.6	72.4	0.00	92.6	77.7
22	29-Jun	78.2	68.4	0.09	82.4	77.0
23	30-Jun	77.2	64.7	0.00	81.4	74.8
24	1-Jul	78.0	59.5	0.02	84.2	72.0
25	2-Jul	76.8	54.8	0.00	85.2	69.0
26	3-Jul	80.3	52.4	0.00	87.6	68.3
27	4-Jul	81.3	62.0	0.17	83.6	72.0
28	5-Jul	84.2	72.9	0.00	81.1	72.8
29	6-Jul	87.4	68.6	0.00	90.2	73.9
30	7-Jul	89.4	64.4	0.00	90.6	73.4
31	8-Jul	93.1	68.8	0.00	94.2	76.4
32	9-Jul	96.0	72.5	0.00	95.4	78.1
33	10-Jul	93.1	73.9	0.00	92.3	80.7
34	11-Jul	88.5	70.6	0.00	95.7	79.2
35	12-Jul	84.1	64.7	0.00	94.8	79.8
36	13-Jul	83.4	66.5	0.00	90.4	77.8
37	14-Jul	86.8	60.4	0.00	95.3	74.6
38	15-Jul	91.1	67.5	0.00	97.1	77.0
39	16-Jul	91.9	71.4	0.00	97.9	79.4
40	17-Jul	93.5	69.0	0.00	100.3	79.3
41	18-Jul	89.5	74.0	0.00	98.3	82.0
42	19-Jul	94.6	71.6	0.16	98.6	80.6
43	20-Jul	81.9	62.9	0.00	88.8	75.5
44	21-Jul	83.1	60.0	0.00	91.9	70.9
45	22-Jul	84.0	58.4	0.00	93.6	71.5
46	23-Jul	82.2	62.8	0.00	95.8	75.5

DAP	Date	Max Temp °F	Min Temp °F	Rainfall (in.)	Max Soil Temp °F	Min Soil Temp °F
47	24-Jul	84.9	58.6	0.00	88.8	73.4
48	25-Jul	88.4	60.5	0.00	93.2	73.5
49	26-Jul	86.9	66.4	0.00	92.9	77.3
50	27-Jul	90.9	67.4	0.00	98.1	78.1
51	28-Jul	92.2	65.4	0.00	98.6	78.1
52	29-Jul	89.8	68.6	0.99	92.7	78.7
53	30-Jul	79.3	70.3	0.38	83.2	78.1
54	31-Jul	88.9	68.0	0.00	91.0	76.1
55	1-Aug	90.8	66.3	0.00	90.2	75.4
56	2-Aug	92.3	66.1	0.00	92.0	75.8
57	3-Aug	92.1	70.7	0.00	91.9	77.8
58	4-Aug	94.9	72.5	0.00	92.4	79.1
59	5-Aug	83.9	72.3	0.08	89.0	80.5
60	6-Aug	87.9	72.1	0.07	87.9	78.9
61	7-Aug	95.1	72.6	0.00	91.7	78.8
62	8-Aug	98.1	78.4	0.00	94.1	81.6
63	9-Aug	89.5	76.2	0.04	93.2	80.6
64	10-Aug	91.0	67.2	0.00	91.6	80.8
65	11-Aug	79.7	62.0	0.00	87.7	77.3
66	12-Aug	88.6	57.1	0.00	93.0	72.6
67	13-Aug	89.7	65.7	0.04	92.5	76.8
68	14-Aug	86.9	61.2	0.00	94.2	74.0
69	15-Aug	87.7	64.0	0.00	91.5	74.8
70	16-Aug	90.7	71.0	0.04	89.9	78.5
71	17-Aug	89.5	71.5	0.53	90.8	77.1
72	18-Aug	80.2	60.0	0.00	89.1	74.2
73	19-Aug	79.0	56.0	0.02	78.2	73.0
74	20-Aug	77.0	67.3	0.59	78.2	73.3
75	21-Aug	70.2	64.8	0.00	76.2	72.5
76	22-Aug	71.0	65.0	0.00	76.2	72.5
77	23-Aug	79.4	66.4	0.00	81.3	72.3
78	24-Aug	87.9	67.4	0.00	86.1	73.8
79	25-Aug	94.7	72.5	0.00	89.4	76.8
80	26-Aug	90.3	70.7	0.00	88.9	78.0
81	27-Aug	83.0	62.8	0.00	88.6	74.7
82	28-Aug	84.3	56.6	0.00	88.3	72.8
83	29-Aug	86.5	57.9	0.00	86.8	72.9
84	30-Aug	86.6	60.4	0.00	88.1	73.7
85	31-Aug	81.2	60.7	0.00	87.3	74.1