UNIVERSITY OF DELAWARE

LIMA BEAN

VARIETY TRIAL RESULTS

2008

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2008 University of Delaware Lima Bean Variety Trial

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The 2008 Lima Bean Variety Trial included a total of 30 lines. Fourteen of the lines were from the two participating companies: ADM Edible Bean Specialties, Inc. and Ben Fish & Son. Twelve varieties were lines from the University of Delaware lima bean breeding program. The remaining four lines were standard varieties planted as checks. 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 2008 Delaware Lima Bean Variety Trail

Variety Name	Company
GBL 21-04-DA	Ben Fish
GBL 22-04-DA	Ben Fish
GBL 23-04-DA	Ben Fish
GBL 24-04-DA	Ben Fish
GBL 25-04-DA	Ben Fish
GBL 26-04-DA	Ben Fish
G200385	ADM Research
G200382	ADM Research
G200430	ADM Research
G200476	ADM Research
LD4	ADM Research
G418267	ADM Research
G423273	ADM Research
Meadow	ADM Seedwest
Cypress	Check (ADM Seedwest)
184-85	Check (Ben Fish)
C-elite Select	Check (Ben Fish)
Concentrated Fordhook	Check (Charter Seed)
DE0401711	University of Delaware
DE0402701	University of Delaware
DE0403407	University of Delaware
DE0407902	University of Delaware
DE0407903	University of Delaware
DE0407904	University of Delaware
DE0407905	University of Delaware
DE0407906	University of Delaware
DE0407907	University of Delaware
DE0407908	University of Delaware
DE0407910	University of Delaware
DE0407911	University of Delaware

Location:
Field 29 at the University of Delaware Research and Education Center Farm, Georgetown, DE

Cultural Practices:
The trial was planted on June 13, 2008 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. Pre-emergence herbicides (0.75 oz./A Sandea + 1 pint/A Dual II Magnum) were applied on June 13, 2008. Plots were cultivated on July 7, 2008. 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 plots and the number of full, flat and dry pods was counted. Not all replications for a variety were harvested on the same day. Plots were harvested as close to ten percent dry pods as possible. All plots were harvested at a similar maturity as there were no significant differences between the varieties in either percent flat pods or percent dry pods at harvest (Table 1). Harvest began on August 25 (73 DAP) and ended on September 16 (95 DAP).

A 15-foot section from each plot was harvested. The plants were cut off at soil level and weighed. To determine maturity at harvest, pods were stripped from five harvested plants from each plot and counted as full, flat or dry. The plants and pulled pods were fed into a stationary FMC viner. 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 1. The standard varieties 184-85 and Concentrated Fordhook were among the highest yielding varieties. There were significant differences in stand count among the varieties this year (Table 2). Flowering time among the varieties was more variable this year than in 2007 (Table 3). However, temperatures were favorable for pod set throughout nearly all of the flowering period, so all varieties should have experienced similarly favorable conditions.

Acknowledgements
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Table 1. Yield, Days to Harvest, Maturity at Harvest, Number of Pods per Plant, Plant Weight and Stand Counts at Harvest for Entries in the 2008 Lima Bean Variety Trial

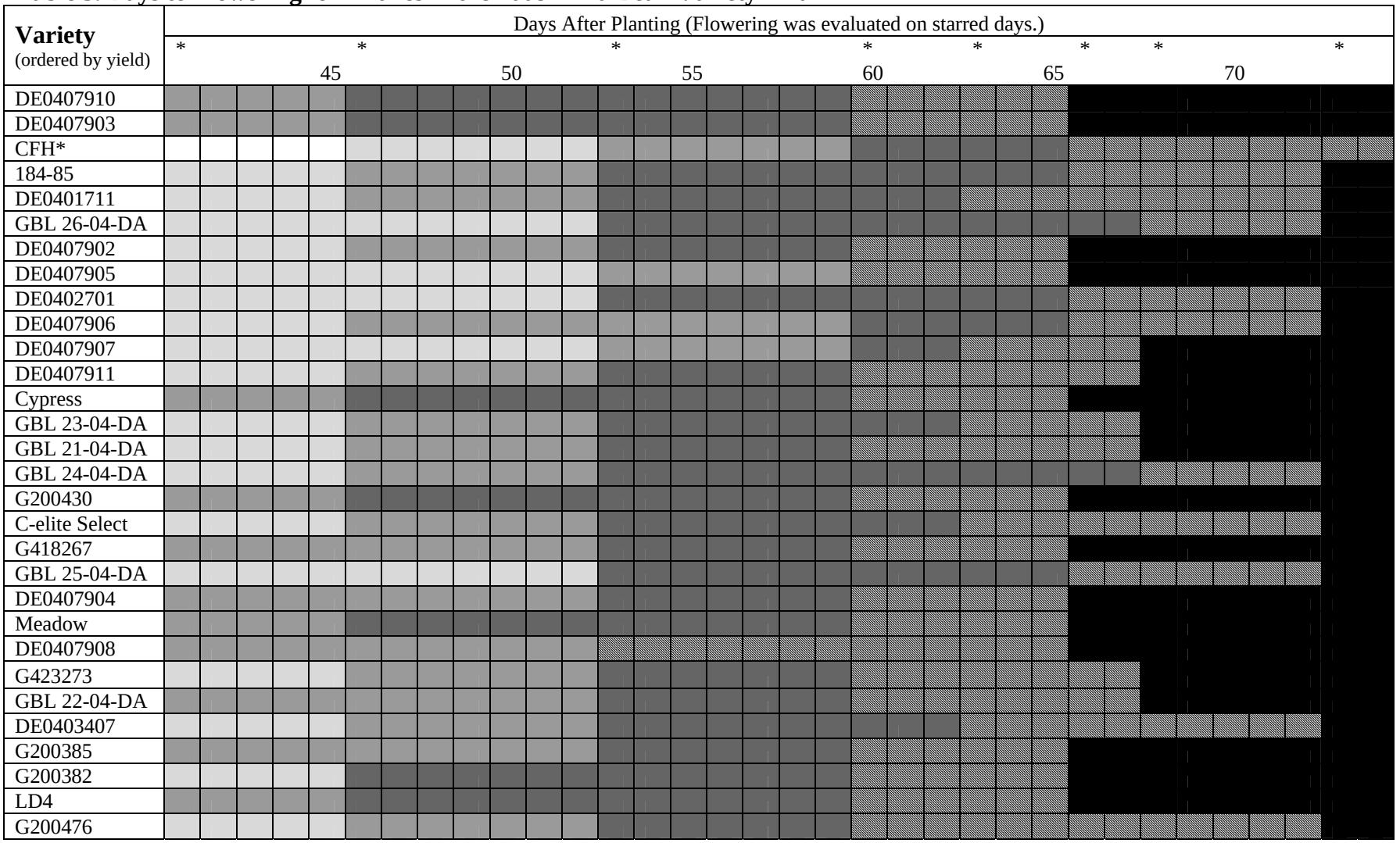
Variety	Days to Harvest	Yield (Lbs/A)	% Full	% Flat	% Dry	# Pods/Plant	Plant Weight (Lbs/15 ft)	# Plants/15 ft
DE0407910	79	4017 a	77 bcdefg	12 a	10 a	30 abcdefg	22.0 abcde	56 ab
DE0407903	76	3901 a	72 efg	21 a	7 a	25 fg	21.6 abcdefg	54 abcde
CFH*	94	3863 a	80 abcdef	8 a	12 a	11 h	20.3 bcdefg	55 abc
184-85	84	3794 a	89 ab	9 a	2 a	31 abcdefg	24.7 a	53 abcdefg
DE0401711	83	3785 a	86 ab	5 a	9 a	30 bcdefg	21.8 abcdef	55 abc
GBL 26-04-DA	85	3592 a	88 ab	6 a	6 a	38 a	21.5 abcdefg	49 bcdefghi
DE0407902	82	3501 a	87 ab	5 a	9 a	24 g	20.5 abcdefg	56 ab
DE0407905	83	3501 a	84 abcde	6 a	10 a	25 fg	20.1 cdefg	51 abcdefgh
DE0402701	85	3475 a	79 abcdef	13 a	8 a	34 abc	22.4 abcd	52 abcdefgh
DE0407906	86	3460 a	85 abcd	9 a	6 a	27 bcdefg	24.5 ab	54 abcde
DE0407907	84	3409 a	81 abcdef	10 a	9 a	28 bcdefg	21.8 abcdef	51 abcdefgh
DE0407911	83	3407 a	84 abcde	6 a	10 a	25 efg	22.0 abcde	54 abcdef
Cypress	77	3329 a	79 abcdef	13 a	8 a	34 ab	20.4 bcdefg	49 bcdefghi
GBL 23-04-DA	82	3300 a	86 ab	11 a	3 a	25 efg	20.6 abcdefg	56 a
GBL 21-04-DA	83	3254 a	83 abcdef	10 a	7 a	27 cdefg	20.5 abcdefg	54 abcde
GBL 24-04-DA	84	3251 a	88 ab	8 a	4 a	32 abcde	22.8 abc	51 abcdefgh
G200430	80	3189 a	65 g	24 a	10 a	30 abcdefg	18.8 cdefg	49 defghi
C-elite Select	83	3169 a	85 abc	7 a	8 a	31 abcdefg	20.4 bcdefg	50 abcdefgh
G418267	81	3122 a	82 abcdef	13 a	6 a	29 bcdefg	19.1 cdefg	49 cdefghi
GBL 25-04-DA	83	3091 a	90 a	4 a	6 a	30 bcdefg	19.2 cdefg	53 abcdefg
DE0407904	77	3041 a	78 abcdefg	16 a	6 a	26 defg	18.5 defgh	55 abcd
Meadow	75	3013 a	78 abcdef	18 a	4 a	28 bcdefg	20.3 bcdefg	52 abcdefgh
DE0407908	78	2973 a	74 cdefg	16 a	11 a	32 abcdef	19.4 cdefg	46 ghi
G423273	80	2899 a	80 abcdef	10 a	10 a	30 bcdefg	17.6 fgh	46 hi
GBL 22-04-DA	81	2794 a	81 abcdef	8 a	11 a	25 efg	19.2 cdefg	55 abcd
DE0403407	84	2769 a	85 abc	9 a	6 a	29 bcdefg	20.1 cdefg	51 abcdefgh
G200385	79	2716 a	73 defg	20 a	8 a	28 bcdefg	18.0 efgh	48 efghi
G200382	79	2657 a	71 fg	20 a	9 a	33 abcd	14.4 h	43 i
LD4	76	2636 a	81 abcdef	11 a	8 a	27 bcdefg	17.4 gh	47 fghi
G200476	80	2260 a	73 defg	19 a	9 a	27 bcdefg	18.1 defgh	47 fghi
LSD		**NA**	**12.39**	**NA**	**NA**	**7.67**	**4.29**	**6.65**
P-value		***0.0697***	***0.0138***	***0.1544***	***0.4066***	***<0.0001***	***0.0086***	***0.0036***

* Concentrated Fordhook

Table 2. Stand Counts for Each Entry in the 2008 Lima Bean Variety Trial on July 1, 2008 (18 DAP)

Variety Name	Plants/Yard	
GBL 24-04-DA	12.25	a
DE0407906	12.25	a
GBL 23-04-DA	11.75	ab
DE0407903	11.75	ab
DE0407911	11.75	ab
Concentrated Fordhook	11.50	abc
GBL 25-04-DA	11.25	abcd
DE0407902	11.25	abcd
DE0407904	11.25	abcd
DE0407910	11.25	abcd
DE0401711	11.00	abcd
GBL 21-04-DA	10.75	abcd
GBL 22-04-DA	10.75	abcd
GBL 26-04-DA	10.75	abcd
C-elite Select	10.75	abcd
DE0407907	10.75	abcd
G200385	10.50	abcde
184-85	10.25	abcde
DE0403407	10.25	abcde
DE0407905	10.00	bcde
DE0402701	10.00	bcde
G200476	9.75	bcde
G418267	9.75	bcde
Cypress	9.75	bcde
DE0407908	9.75	bcde
LD4	9.50	cde
G423273	9.50	cde
G200430	9.25	de
Meadow	9.25	de
G200382	8.50	e
LSD	**2.0441**	
P-value	***0.0274***	

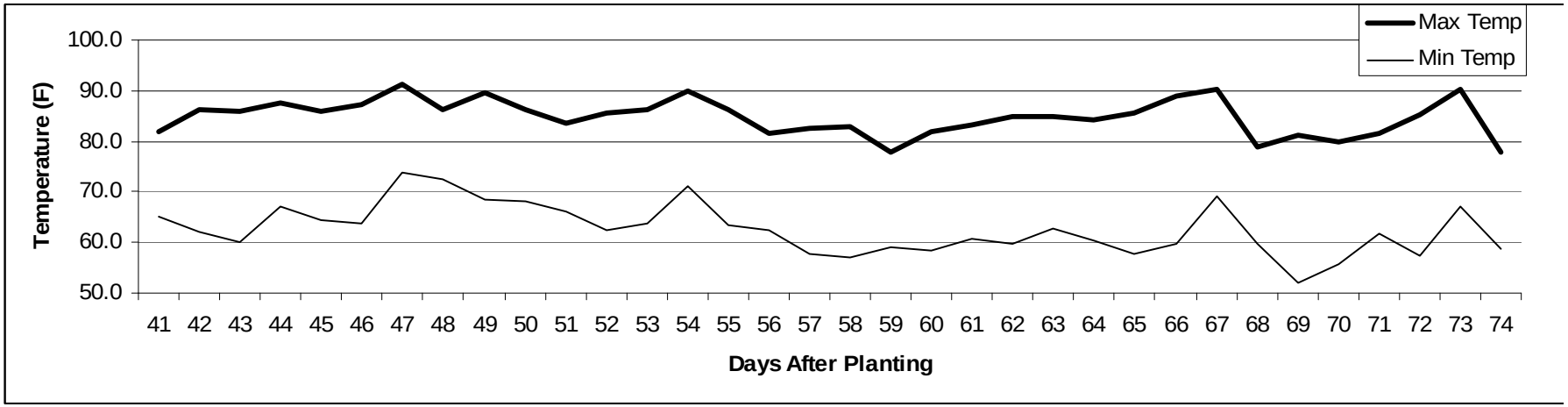
Table 3. Days to Flowering for Entries in the 2008 Lima Bean Variety Trial



*Concentrated Fordhook

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

Chart 1. Max and Min Temperatures During the Flowering Period for the 2008 Lima Variety Trial



Appendix A: Weather Data for 2008 Lima Variety Trial
June 13th (planting) to September 16th (final harvest)

DAP	Date	Max Temp °F	Min Temp °F	Rainfall (in.)
0	13-Jun	85.5	62.9	0.00
1	14-Jun	89.9	67.1	0.06
2	15-Jun	85.1	67.0	0.04
3	16-Jun	87.7	62.3	0.24
4	17-Jun	80.9	61.1	0.05
5	18-Jun	77.4	52.9	0.12
6	19-Jun	76.5	54.7	0.04
7	20-Jun	82.3	56.7	0.00
8	21-Jun	85.5	65.9	0.04
9	22-Jun	85.2	63.7	0.06
10	23-Jun	83.3	66.2	0.14
11	24-Jun	81.4	61.8	0.00
12	25-Jun	84.9	58.8	0.00
13	26-Jun	91.9	66.3	0.00
14	27-Jun	91.7	72.0	0.01
15	28-Jun	91.7	68.1	0.00
16	29-Jun	89.9	71.7	0.12
17	30-Jun	85.7	67.0	0.16
18	1-Jul	82.1	64.8	0.00
19	2-Jul	84.8	63.0	0.00
20	3-Jul	88.1	66.1	0.00
21	4-Jul	88.4	68.1	0.48
22	5-Jul	81.0	68.6	0.01
23	6-Jul	81.5	69.9	2.78
24	7-Jul	85.0	70.5	0.00
25	8-Jul	87.3	70.3	0.15
26	9-Jul	80.2	70.1	0.07
27	10-Jul	84.1	66.8	0.00
28	11-Jul	87.7	62.1	0.00
29	12-Jul	87.0	63.7	0.00
30	13-Jul	86.7	63.4	0.00
31	14-Jul	76.5	69.5	0.03
32	15-Jul	86.4	64.9	0.00
33	16-Jul	87.5	61.2	0.00
34	17-Jul	92.2	61.9	0.00
35	18-Jul	92.2	67.3	0.00
36	19-Jul	90.1	68.8	0.00
37	20-Jul	91.7	74.5	0.00
38	21-Jul	91.1	73.0	0.00
39	22-Jul	92.2	72.6	0.00
40	23-Jul	91.0	71.8	0.17
41	24-Jul	81.9	65.1	0.74
42	25-Jul	86.1	62.1	0.00
43	26-Jul	85.8	60.2	0.00
44	27-Jul	87.7	67.1	0.00
45	28-Jul	85.8	64.3	0.00
46	29-Jul	87.2	63.9	0.00

DAP	Date	Max Temp °F	Min Temp °F	Rainfall (in.)
47	**30-Jul**	91.3	73.7	0.00
48	**31-Jul**	86.2	72.5	0.00
49	**1-Aug**	89.6	68.3	0.00
50	**2-Aug**	86.2	68.0	0.36
51	**3-Aug**	83.5	66.2	0.00
52	**4-Aug**	85.6	62.5	0.00
53	**5-Aug**	86.1	63.9	0.00
54	**6-Aug**	89.8	71.1	0.00
55	**7-Aug**	86.4	63.5	0.00
56	**8-Aug**	81.5	62.4	0.00
57	**9-Aug**	82.7	57.7	0.00
58	**10-Aug**	83.0	57.2	0.04
59	**11-Aug**	78.0	59.0	0.00
60	**12-Aug**	82.0	58.4	0.00
61	**13-Aug**	83.1	60.6	0.00
62	**14-Aug**	84.8	59.7	0.00
63	**15-Aug**	84.8	62.7	0.02
64	**16-Aug**	84.1	60.5	0.00
65	**17-Aug**	85.5	57.7	0.00
66	**18-Aug**	88.9	59.8	0.00
67	**19-Aug**	90.3	69.0	0.00
68	**20-Aug**	78.8	59.6	0.00
69	**21-Aug**	81.2	52.1	0.00
70	**22-Aug**	79.8	55.7	0.00
71	**23-Aug**	81.6	61.7	0.00
72	**24-Aug**	85.2	57.5	0.00
73	**25-Aug**	90.4	67.2	0.00
74	**26-Aug**	77.7	58.7	0.00
75	**27-Aug**	79.7	51.9	0.00
76	**28-Aug**	75.1	67.4	0.00
77	**29-Aug**	80.0	71.0	0.00
78	**30-Aug**	88.8	70.9	0.00
79	**31-Aug**	87.0	60.3	0.00
80	**1-Sep**	86.6	53.0	0.00
81	**2-Sep**	90.6	55.8	0.00
82	**3-Sep**	91.6	60.2	0.00
83	**4-Sep**	93.9	62.0	0.00
84	**5-Sep**	86.8	61.1	0.19
85	**6-Sep**	79.3	72.5	1.41
86	**7-Sep**	81.8	63.2	0.00
87	**8-Sep**	85.1	61.1	0.00
88	**9-Sep**	84.4	67.3	0.91
89	**10-Sep**	73.1	63.3	0.00
90	**11-Sep**	75.8	60.7	0.00
91	**12-Sep**	77.8	58.3	0.02
92	**13-Sep**	87.3	71.5	0.01
93	**14-Sep**	91.0	72.2	0.00
94	**15-Sep**	83.7	65.3	0.00
95	**16-Sep**	70.6	57.3	0.00