
UNIVERSITY OF DELAWARE



**POLE LIMA BEAN
VARIETY TRIAL RESULTS
2010**

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2010 University of Delaware Pole Lima Bean Variety Trial

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Introduction

The 2010 Pole Lima Bean Variety Trial included fifteen varieties of pole lima beans. Four of the varieties are commercially available, one was obtained from the USDA germplasm collection and the remaining ten were collected from local growers.

Varieties in the 2010 Delaware Pole Lima Bean Variety Trial

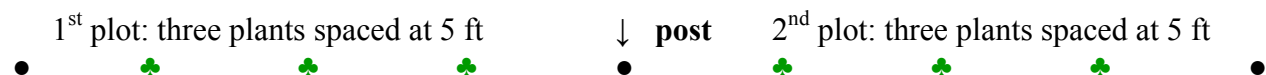
Variety Name	Source
Rohrer's Dr. Martin	Rohrer's Seed: Smoketown, PA
Big Momma	W. Atlee Burpee & Co.
Stokes Big 6	Stokes Seed
King of the Garden	various
Lawr	Delaware State University
Moser	David Moser, Clayton
DSU Big 6	Delaware State University
Pete's Dr. Martin	Delaware State University
Benner Sussex	Millard Benner, Greenwood
Dodd	Ronald Dodd, Georgetown
Lineberger	Paul Layton, Greenwood
Kuvilek	Jack Kuvilek, Wilmington
Coverdale	Larry Coverdale, Milford
PI 549496 'Large White'	USDA Collection/ Virginia
Jones	Paul Layton, Greenwood

Location:

Field 1A at the University of Delaware Research and Education Center Farm, Georgetown, DE

Plot Design

At the Georgetown farm we have four rows of permanent trellis, each 200 ft in length. The spacing between the rows of trellis is 10 ft. Posts are spaced at 20 feet in the row and a plot consists of three plants of the same variety planted between a set of posts. Plants are planted 5 feet apart in the plot and the first plant is planted five feet from the post. This results in a 10 foot spacing between the last plant in a plot and the first plant in the next plot, as illustrated below



Due to space limitations on the trellis, only ten of fifteen varieties were replicated three times. The remaining five varieties were planted in single plots only. For the replicated varieties, a row

of trellis was considered a block and the plots of the ten varieties were arranged randomly in the row.

Cultural Practices:

The plants for the trial were started in 2" pots. Seeds were sown on April 27, 2010 and grown in the greenhouse until 10 days before planting, when they were moved outside to harden off. Plants were transplanted on May 27. The field was drip irrigated. After plants were fully established they were irrigated for two hours every other day. Weed control was accomplished by hand hoeing and rototiller cultivation. Plants were fertilized with soluble 20-20-20 through the drip line on June 23 (20 lb/A N), July 12 (25 lb/A N), and August 2 (20 lb/A N). Brigade at 10 oz/A was applied on July 23 to control spider mites and Warrior at 4 oz/A was applied on September 17 to control stinkbugs. No applications were made for disease control.

Harvest:

All plots were harvested on September 2, September 15, September 22 & 23. Harvests occurred on six days in October with the final harvest on October 29. Not all plots were harvested on each date. All of the October yields are counted together in the data analysis.

Yield was determined as follows: All ripe pods were harvested from the plot and the total weight of harvested pods recorded. For each harvest, 50 pods from each plot were weighed and shelled. If less than 50 pods were harvested, all harvested pods were shelled. The weight of shelled beans was also recorded. When necessary, shelled weight for the plot was extrapolated from the shelled sample.

Results and Discussion

Data from the varieties for which I had replicated plots are analyzed using Fisher's Protected Least Significant Difference Test. The *p*-value reported is the likelihood that differences between the variety averages are due to random variation. If the *p*-value is less than 0.05 (5%), there are assumed to be significant differences between some of the varieties. The Least Significant Difference (LSD) is used to determine which variety averages are significantly different from one another. In the tables below, means followed by the same letter are not significantly different from one another. Means that are not followed by any letters were not included in the statistical analysis (because the varieties were not replicated).

There were significant differences in yield for the September harvests, both in terms of bushels of pods/100 ft of row (Table 1) and in terms of pounds of shelled beans/100 ft of row (Table 2). There were no significant differences in yield for the combined October yields or the total yield. Harvest was later than usual this year because of extremely hot summer weather, which delayed pod set. Thus, varieties with higher early September yields (Big Momma and PI 549496) may be more heat tolerant than the other varieties.

Many of the varieties with high pod to bean conversion (Table 3) are varieties with the narrow thin-walled pods, including Lineberger, Coverdale, PI 549496, Kuvilek, Dodd, Jones, and Stokes Big 6. Lawr also produces narrow, thin walled pods, but the conversion ratio for this variety was reduced because it tended to produce small, discolored and deformed beans this year, perhaps in response to heat stress. Benner Sussex bears pods with thicker walls and a wider shape, but the

beans entirely fill the pod. Pete's Dr. Martin, Moser and DSU Big 6 produce wide pods with a wavy shape. Big Momma produces straight wide pods. Rohrer's Dr. Martin produces very wide pods that are straight.

Pete's Dr. Martin, DSU Big 6, Benner Sussex and Rohrer's Dr. Martin produce the largest pods (Table 4). King of the Garden and PI 549497 produce the smallest pods.

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Brian Hearn and the REC Farm Crew for help with field operations.

Table 1. 2010 Pole Lima Variety Trial: Yield in Bushels of Pods/100 Ft of Row

Variety	Sep 2	Sep 15	Sep 22 & 23	Oct	Total
Big Momma	0.31 a	1.95 a	2.72 a	3.86 a	8.84 a
Moser	0.00 c	0.74 bcd	2.54 a	4.06 a	7.34 a
Kuvilek	0.06 b	1.15 bc	2.09 abc	3.73 a	7.04 a
DSU Big 6	0.04 bc	1.13 bc	2.29 ab	3.30 a	6.75 a
Pete's Dr. Martin	0.04 bc	1.23 b	1.40 bcd	4.02 a	6.69 a
Benner Sussex	0.00 c	0.46 cd	0.89 d	5.03 a	6.38 a
Rohrer's Dr. Martin	0.03 bc	1.11 bc	1.13 cd	3.65 a	5.91 a
Coverdale	0.12	0.73	1.60	3.33	5.78
Lineberger	0.16	1.07	2.33	2.17	5.74
PI 549496	0.23	2.13	1.88	1.39	5.63
King of the Garden	0.00	0.91	1.54	3.03	5.48
Stokes Big 6	0.00	1.00	1.67	2.19	4.86
Lawr	0.00 c	0.20 d	1.22 bcd	3.38 a	4.81 a
Dodd	0.02 bc	0.71 bcd	1.00 cd	3.06 a	4.79 a
Jones	0.01 c	0.49 cd	1.06 cd	2.29 a	3.85 a
<i>p-value</i>	<0.0001	0.0031	0.0113	0.4796	0.1394
LSD	0.053	0.703	1.108	NA	NA

Table 2. 2010 Pole Lima Variety Trial: Yield in Lbs Shelled Beans/100 Ft of Row

Variety	Sep 2	Sep 15	Sep 22 & 23	Oct	Total
Big Momma	2.24 a	16.01 a	28.51 a	37.18 a	83.93 a
Kuvilek	0.54 b	10.73 ab	20.56 abc	41.60 a	73.44 a
Benner Sussex	0.00 c	4.44 cd	8.31 d	57.53 a	70.28 a
Moser	0.00 c	5.61 bcd	22.20 ab	40.30 a	68.11 a
Lineberger	1.52	11.53	28.43	25.52	67.00
Coverdale	1.09	7.52	18.41	37.68	64.70
Pete's Dr. Martin	0.27 bc	10.73 ab	12.52 bcd	39.92 a	63.44 a
DSU Big 6	0.33 bc	8.84 bc	20.23 abc	31.80 a	61.19 a
PI 549496	1.91	22.50	20.25	16.11	60.76
Dodd	0.18 bc	7.09 bc	10.05 cd	32.84 a	50.15 a
Rohrer's Dr. Martin	0.16 bc	7.15 bc	7.65 d	34.46 a	49.42 a
Stokes Big 6	0.00	7.77	16.28	24.04	48.10
Lawr	0.03 c	1.27 d	9.41 d	33.99 a	44.70 a
King of the Garden	0.00	7.11	10.61	26.53	44.24
Jones	0.07 c	4.03 cd	10.31 cd	24.77 a	39.19 a
<i>p-value</i>	<0.0001	0.0025	0.0050	0.3690	0.1744
LSD	0.436	5.746	10.613	23.689	32.815

Table 3. 2010 Pole Lima Variety Trial: Pod to Bean Weight Conversion Factor

Variety	% Conversion Pods/Beans
Lineberger	52.73
Coverdale	50.54
Benner Sussex	49.74 a
PI 549496	48.77
Kuvilek	47.41 ab
Dodd	46.74 abc
Jones	45.11 abcd
Stokes Big 6	44.67
Big Momma	43.05 bcd
Pete's Dr. Martin	42.64 bcd
Moser	42.17 bcde
DSU Big 6	40.95 cde
Lawr	40.70 de
King of the Garden	36.48
Rohrer's Dr. Martin	36.45 e
<i>p-value</i>	0.0068
LSD	5.810

Table 4. 2010 Pole Lima Variety Trial: 100 Pod Weight (lbs)

Variety	100 Pod Weight (lbs)
Pete's Dr. Martin	4.69 a
DSU Big 6	4.52 ab
Benner Sussex	4.46 abc
Rohrer's Dr. Martin	4.46 abc
Big Momma	4.23 bcd
Moser	4.05 cde
Lawr	3.94 de
Stokes Big 6	3.85
Dodd	3.65 ef
Jones	3.46 f
Coverdale	3.43
Lineberger	3.00
Kuvilek	2.94 g
King of the Garden	2.40
PI 549496	2.24
<i>p-value</i>	<0.0001
LSD	0.415