Report to the Oregon Processed Vegetable Commission
2000–2001

1. Title: Green Bean Breeding

2. Project Leaders: James R. Myers, Horticulture
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3. Project Status: Terminating 30 June, 2001

4. Project Funding: $50,000 breeding
$10,000 processing
$60,000 total

Breeding funds were used for a major portion of the support of a vegetable breeding technician, student labor, supplies, and research farm expenses. Processing funds were used for processing samples of experimental beans, laboratory analysis, and for student labor.

5. Objectives:

i. Breed Bush Blue Lake green bean varieties with high economic yield.

ii. Improve pod characteristics including straightness, color, smoothness, texture, flavor and quality retention, and combine with delayed seed size development.

iii. Incorporate white mold resistance, and improve root rot tolerance while maintaining resistance to bean common mosaic virus.

iv. Initiate populations to facilitate molecular marker assisted selection of desirable horticultural traits.

v. Evaluate novel genetic traits of potential benefit.

6. Report of Progress:

Bean breeding lines and commercial varieties were tested in replicated trials planted 29 April, 16 May, 30 May, 13 June, and 27 June. The advanced trials planted 29 April and 30 May consisted of three check varieties and seven advanced lines planted in two row plots replicated six times. The 16 May and 27 June trials were preliminary trials, and consisted of one row per entry replicated six times. These trials had four check varieties and 20 experimental lines. The 13 June trial consisted of four check varieties (two full sieve, and two small sieve green beans), four OSU lines, and 14 commercial entries (all green beans except for one wax Romano).

For all trials, five-foot sections of row were handpicked on each harvest date in each of four replications. In most cases, three harvests on alternate days were made to obtain a range of maturities. Replications were combined for grading.

Samples were canned and frozen at Food Science and Technology for evaluation by industry representatives in February. Processed quality data will be published in a separate report.

Data from replicated trials are summarized in Tables 1-12 and Figures 1-15. The growing season in general was very mild with little evidence of split sets due to high temperatures in most trials. The first trial had a small split set in some lines. The commercial trial did have a strong split set.

Advanced Standard Sieve OSU Lines: For full sieve advanced lines, Oregon 54, Oregon 5635, and OSU 5643 generally had the highest T/A and $/A values (see summary table below, tables 1-6; figures 1-5). Oregon 91G generally had the lowest yields. OSU 5669 show greatest similarity to Oregon 91G for field performance but generally had better $/A value and greater T/A yields. OSU 5669 has significantly better pod color as well as straighter and smoother pods. OSU 5635, and OSU 5643 are most similar to Oregon 54 with straighter and smoother pods.

	Season average $/A based on		
Line	Trial averages[z]	Selected harvests[y]	Highest harvests
Oregon 91G	1519	1494	1586
Oregon 54	1643	1669	1767
OSU 5635	1707	1675	1852
OSU 5643	1652	1716	1726
OSU 5669	1562	1643	1682
LSD @5%	142	152	212

[z]Average of 2-5 harvests from 4 trials, based on weight of graded beans.

[y]The harvest selected as best for comparison and used for analysis of variance at 50% 1-4 sieve in tables 5 and 6.

Five year averages for yield and $/A values are shown below (and in figure 14) for full sieve advanced lines and checks. Trends in the data generally suggest the following order: Oregon 54=OSU 5635>OSU 5669>Oregon 91G. OSU 5635 again this year appears to have yield stability in that it performed consistently in most years, whereas Oregon 54 showed greater year to year variation.

In terms of pod quality, OSU 5635 and OSU 5643 are similar. Both have color better than Oregon 91G and similar to Oregon 54. OSU 5643 was rated as having significantly straighter and smoother pods than any of the other advanced lines or checks. It also had pods of similar length to Oregon 54, and slightly longer than other advanced lines and 91G. OSU 5669 had significantly better pod color compared to any other line. Pod length was equivalent to Oregon 91G. Pod straightness and smoothness were intermediate to Oregon 91G and OSU 5643. OSU 5635 and OSU 5643 are sister lines

from the cross Oregon 54 X OSU 5163. Both perform very similarly to Oregon 54, but do have better pod quality (especially OSU 5643). Growth habit in the field is similar to Oregon 54. OSU 5643 is about a day earlier in maturity than Oregon 54 while OSU 5635 has similar maturity. In the past, we have noticed a greater tendency towards a split set in OSU 5635, and again observed such a split in Trial 1. Overall, OSU 5643 appears to be the better of the two lines, and is suitable as a replacement for Oregon 54. We do not know at present if it has a more concentrated set than does Oregon 54. OSU 5669 is from the cross OSU 5256 X Oregon 54. It is similar in maturity to Oregon 91G, and would appear to be a good replacement for that cultivar.

Five year average for full sieve beans[z]							
Year							
Line	1996	1997	1998	1999	2000	Overall Average	Average of 1998, 1999 and 2000
	Adjusted T/A						
Oregon 91G	9.1	9.4	8.3	11.5	9.3	9.5	9.7
Oregon 54	10.4	9.4	8.5	13.2	9.8	10.3	10.5
OSU 5635	9.4	10.0	9.4	12.6	10.2	10.3	10.7
OSU 5669			8.9	12.2	9.8		10.3
LSD @5%						0.7	0.8
	$/A						
Oregon 91G	1440	1589	1450	1989	1593	1612	1677
Oregon 54	1651	1622	1489	2277	1688	1745	1818
OSU 5635	1485	1651	1646	2172	1748	1740	1855
OSU 5669			1580	2084	1675		1780
LSD @5%						110	137

[z]Average of 5, 5, 5, 4 and 5 trials in 1996, 1997, 1998, 1999, and 2000 respectively. Based on field yields.

Other standard sieve lines: Two preliminary trials were grown this year with four standard sieve lines included in addition to the advanced lines (tables 2 & 3; figures 2 & 4). OSU 5618, OSU 5699, OSU 5706 and OSU 5793 were grown in trials for the first time this year. T/A and $/A values were similar to Oregon 91G. Most of these lines have similar maturity compared to Oregon 91G, but OSU 5793 appears to be a day or two earlier. OSU 5618, from the cross Oregon 54 X Oregon 91G, had excellent dark green color (better than OSU 5669) and high quality bush blue lake pods. It may be best used as an intermediate (60%) sieve size bean. OSU 5699 is from the cross OSU 5256 X OSU 5416. It had pods with color similar to 91G, but significantly more curved, perhaps due to greater lodging in the field. OSU 5706 is a sister line to 5699. It had long pods with an acceptable reverse curve. Pod color was intermediate to Oregon 91G and OSU 5618. OSU 5793 is a full sieve bean from the cross OSU 5446 X Oregon 91G. It had long, slightly oval pods with a tendency to curve and color lighter than or similar to Oregon 91G. In the earlier preliminary trial its floppy growth habit contributed to early incidence of white mold. All in all, OSU 5618 and OSU 5706 should be kept in trials again next year while OSU 5699 and OSU 5793 should be dropped.

Small Sieve Beans: With the decision last year to discontinue release of OSU 5613, we concentrated on identifying suitable four sieve lines for trialing and release. In advanced trials, OSU 5804, OSU 5819, and OSU 5842 were again tested. Minuette and OSU 5613 were used as small sieve checks in the advanced trials. OSU 5804 and OSU 5819 are from the cross OSU 5446 X Oregon 91G. OSU 5842 was derived from the cross Oregon 54 X OSU 5446. The four sieve beans were generally higher yielding when averaged over trials than OSU 5613 and Minuette, but only OSU 5804 had significantly higher yields than the checks (see table below and tables 7-10; figures 6-10). All had better pod length than OSU 5446, but OSU 5804 and OSU 5842 had a tendency towards oval pods. Best of the group was OSU 5819 with round pod cross-section and darker green color compared to Oregon 91G.

Season Average $/A based on			
Line	Trial Averages	Selected Harvests[y]	Highest Harvests
OSU 5613	1300	1579	1579
5804	1585	1583	1728
5819	1403	1551	1551
5842	1429	1465	1527
Minuette	1317	1523	1523
LSD @5%	229	NS	196
[z]Average of 2-5 harvests from 4 trials, based on weight of graded beans.			
[y]The harvest selected as best for comparison and used for analysis of variance in table 10.			

Both OSU 5804 and OSU 5842 have been tested before, for three and two years, respectively (see table below and figure 15). The lines produce mostly 3 and 4 sieve beans at optimum harvest. Interestingly, they outyielded and had higher $/A than both OSU 5613 and Minuette, although the difference was not statistically significant from the two years with a complete data set. OSU 5844 has also been tested two years, but unlike OSU 5842, only in preliminary trials, so was not included in the table below. Pods were similar to OSU 5842, but very oval. Of the advanced lines, OSU 5819 should be retained while the other lines should be dropped.

Three year average for small sieve beans[z]								
	T/A				$/A			
Line	1998	1999	2000	AV 1999 & 2000	1998	1999	2000	AV 1999 & 2000
OSU 5613	6.3	7.0	7.5	7.3	1610	1819	1682	1751
OSU 5804	7.9	7.8	8.0	7.9	1914	2174	1666	1920
OSU 5842		9.1	8.2	8.7		2299	1534	1917
Minuette	6.4	6.0	7.3	6.7	1638	1527	1576	1552
LSD @ 5%				NS				NS
[z]Based on 2 trials in 1998, 1 trial in 1999 and 4 trials in 2000. Yields are field yields.								

In preliminary trials, OSU 5613, Minuette, and Medinah were grown as checks. Small sieve beans tested for the first time this year included OSU 5757 (OSU 5569 X 76-110), OSU 5798 (OSU 5446 X Oregon 91G), OSU 5800 (OSU 5446 X Oregon 91G), OSU 5835 (Oregon 54 X OSU 5446), OSU 5870 (OSU 5446 X Oregon 5470), OSU 5912 (Teseo X OSU 5446), OSU 5944 (OSU 5446 X Teseo), and OSU 5947 (same as OSU 5912). Among checks, Minuette was highest yielding (and had highest $/A) in the first preliminary trial while OSU 5613 was highest in the second trial. Medinah was generally one of the lower yielding lines in the two trials. All experimental lines produced mostly three and four sieve size pods. OSU 5757 had a very upright architecture and held flowers and pods above the canopy, but was the lowest yielding entry in the trial. Other low yielding lines were OSU 5798 and possibly OSU 5944. Other lines appeared acceptable for yield. While we would most likely not risk discarding a good line by eliminating OSU 5757 and OSU 5798, other lines should be tested for another year before drawing conclusions based on yield. Two lines that stood out from the others are OSU 5835 and OSU 5944. Both have good pod quality with especially straight pods and excellent color. OSU 5835 in particular has significantly darker green color than OSU 5669. OSU 5944 was observed to have a porous canopy (which might reduce white mold incidence) and was easy to hand pick. OSU 5947 had very erect growth habit, and may be a line to use in crosses if it does not have all of the attributes needed in a cultivar for release.

Commercial Bean Trial: A strong split set was noted for certain materials in this trial. Early maturing lines seemed to have avoided the problem, but Oregon 91G, Oregon 54, and OSU 5635 had a moderate split, and HMX 5991, Minuette, and XP 390 had a severe split. Because of the weather and watering regime, lines became seedy without the pods reaching full size and maturity. Three commercial lines were submitted that are full or intermediate sieve types (SB 4247, SB 4248, & SB 4249). The three are very close to the Oregon BBL material in pod characteristics. SB 4247 is of particular interest because of its upright plant architecture. It was slightly lower yielding (and had lower $/A value) than the full sieve checks, but not significantly lower than Oregon 91G. Pod cross-section shape bears watching on these lines. Highest yielding among the small sieve types was PLS 87 and Igloo. Lines with extremely good color were Savannah and HMX 5991.

Root rot and white mold trials: A root rot trial containing 71 checks and breeding lines was grown in two replicates and evaluated (table 13). This year's test was a good one with susceptible lines having high scores. Most OSU lines had moderate to high scores although OSU 5733 had a relatively low score of 2.5. One-hundred checks, and breeding and germplasm lines were grown in a white mold nursery (Table 14). Disease incidence was about average this year and less severe than last year. Nine OSU breeding lines (designated with a "B" prefix) had relatively low scores, and may have physiological resistance. B7354-6-2-1 with an average score of 1.25 also tested low last year, and has done well in the straw test. This a low yielding flat-podded line, and is being crossed with BBL types. L192, MO162, NY1-6020-5, PI 207130, and PI 2900990 all appear to be good sources of resistance, although architecture may confound the low ratings. Correlation among white mold incidence, estimated yield, and growth habit (Table 15)

showed a significant correlation between white mold score and growth habit (white mold incidence decreased with increasing erectness). An Additive Main Effects, Multiplicative Interactions (AMMI) Analysis was conducted on white mold field data from three years (Figure 16). A significant genotype by environment (GxE) interaction was observed where some lines showed similar white mold scores over environments, while other lines varied greatly. Those lines with low white mold scores overall, and positive GxE values probably have physiological resistance to white mold and should be the focus of crossing efforts.

Development and evaluation of new materials: Selection continues in the Oregon blue lake X Minuette crosses to obtain lines with improved architecture. Many selections from these crosses also have extremely dark green pods as well. This material is now in the F_6 generation and was harvested as small bulks, so seed will be available for testing in replicated trials next year. . Other crosses have been made, and populations are being advanced for white mold resistance, additional sources of improved architecture and general population improvement within the blue lake background.

Molecular Marker Laboratory: DNA was extracted from 110 bean varieties (mostly snap beans) for a phylogenetic analysis. Eighty-one varieties were analyzed with 20 random amplified polymorphic DNA (RAPD) markers and a phylogenetic tree was produced. As might be expected, the OSU BBL lines formed a cluster separate from other snap bean lines. Twelve additional markers are ready to be added to the analysis and 16 candidate primers are currently being tested. We expect to have 50-60 markers from the first 100 primers.

A recombinant inbred (RI) population based on the cross OSU 5630 X Minuette and its reciprocal was evaluated for morphological and horticultural traits (plant height, internode length, branching, leaf color, leaf size, pod color, pod straightness, pod distribution, pod clustering, crop load, lodging, stem thickness, hybrid weakness factor (*Dl*) and shiny vs. dull pods (*ace*). DNA from 98 RI's was extracted, but the reciprocal with 90 RI's has yet to be extracted. Fifty-one candidate primers were selected based on previous phylogenetic screening. The first six primers yield nine segregating markers. There are 45 more to test, and we expect to find 60-70 segregating markers from the first 100 primers.

7. Summary:

Twenty OSU lines were evaluated in replicated handpicked yield trials planted over the period 29 April to 27 June. Minuette was included as a small sieve check in all trials and Medinah was included in some trials. Fifteen commercial varieties (including standard and small sieve green beans, and wax a Romano bean) were also evaluated. Continuing a trend from previous years, OSU 5669 had yields similar to or better than Oregon 91G with superior pod quality. OSU 5635 and OSU 5643 had yields similar to Oregon 54 and had good pod quality. Among small sieve lines, OSU 5819 fits a four sieve niche and should be retested next year. Small sieve lines in preliminary trials included OSU 5835, OSU 5944, and OSU 5947, which should be retained because of either good pod characteristics, or erect growth habit. White mold and root rot trials were continued with the identification of several lines with resistance. Crosses with new white mold resistant lines were made, and populations were advanced in the field.

Table 1. Yields of advanced OSU standard green bean lines on two planting dates, Corvallis, 2000.[z]

Trial	Line	Av. Stand	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Av. Adj. T/A 50%[y]	Av. Adj. T/A 60%[y]
1	91G	137	75	60	7.5	8.2	7.5*	8.0	7.4
29-Apr			76	47	8.0	7.8*	7.1		
			79	36	9.4	8.1	7.5		
	OR 54	118	76	86	5.5	7.5	6.7	8.1	7.4
			78	69	6.9	8.2	7.4		
			79	56	8.4	8.9	8.1*		
			80	47	8.0	7.8*	7.2		
			82	38	9.1	8.0	7.5		
	5635	148	76	80	5.5	7.1	6.4	7.9	7.2
			78	63	6.3	7.1	6.4		
			79	57	7.8	8.3	7.6*		
			80	51	8.3	8.4*	7.7		
			82	45	9.2	8.8	8.1		
	5643	144	76	79	6.7	8.7	7.8	8.6	7.9
			79	54	8.7	9.0*	8.3*		
			80	43	8.8	8.2	7.6		
	5669	135	76	61	6.5	7.2	6.5*	7.6	7.0
			78	52	7.6	7.8*	7.1		
			79	47	8.4	8.2	7.5		
			80	46	7.6	7.3	6.7		
3	91G	149	65	54	9.6	10.0	9.2*	10.5	9.6
30-May			66	52	10.2	10.4*	9.5		
			68	38	12.5	11.0	10.2		
	OR 54	149	66	73	9.9	12.2	11.0	12.3	11.2
			69	52	11.3	11.5*	10.6*		
			70	44	13.9	13.1	12.0		
	5635	150	66	73	9.8	12.0	10.8	12.0	11.0
			69	54	12.0	12.4*	11.4*		
			70	47	12.0	11.7	10.7		
	5643	149	66	67	9.6	11.2	10.2*	12.0	11.0
			69	52	12.5	12.8*	11.7		
	5669	150	64	68	8.8	10.4	9.4	10.8	9.9
			66	57	10.2	10.9*	10.0*		
			69	39	12.3	11.0	10.2		

[z]Mean of 4 replications; subplots of 5' were harvested from double 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. 50% = tons/acre adjusted to 50% 1-4 sieve; adj. 60% = tons/acre adjusted to 60% 1-4 sieve. Analysis of variance (Table 5) was calculated using the harvest marked with *.

[y]Average Adj. T/A is a rough estimate because of non-uniform number of harvests included.

Table 2. Yields of preliminary OSU green bean lines, May 16 planting, Corvallis, 2000.[z]

Line	Av. Stand	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Av. Adj. T/A 50%[y]	Av. Adj. T/A 60%[y]
91G	150	66	70	8.3	10.0	9.0*	9.2	8.4
		69	46	9.5	9.1*	8.4		
		70	31	10.5	8.5	7.9		
OR 54	143	69	61	8.4	9.3	8.5*	8.9	8.2
		71	41	10.1	9.2*	8.5		
		73	27	10.6	8.2	7.7		
5635	150	69	75	9.4	11.8	10.6	10.3	9.4
		71	51	9.3	9.4*	8.6*		
		73	37	11.0	9.6	8.9		
5643	150	67	90	7.6	10.6	9.5	9.8	8.9
		69	66	8.3	9.7	8.8*		
		71	46	9.4	9.0*	8.3		
5669	150	66	85	8.7	11.8	10.6	10.0	9.2
		69	50	9.7	9.7*	8.9*		
		71	32	10.5	8.6	8.0		
5618	150	66	89	6.6	9.2	8.2	8.5	7.7
		69	54	8.6	9.0*	8.2*		
		71	32	8.8	7.3	6.8		
5699	146	65	74	7.7	9.5	8.6	9.6	8.7
		67	64	8.6	9.8	8.9*		
		69	46	9.8	9.4*	8.7		
5706	150	69	55	9.0	9.4*	8.6*	8.6	7.9
		71	35	9.0	7.7	7.1		
5793	150	63	94	5.8	8.3	7.4	8.5	7.7
		65	77	6.9	8.7	7.8		
		67	58	7.9	8.5*	7.8*		

[z]Mean of 4 replications; subplots of 5' were harvested from double 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. 50% = tons/acre adjusted to 50% 1-4 sieve; adj. 60% = tons/acre adjusted to 60% 1-4 sieve. Analysis of variance (Table 5) was calculated using the harvest marked with *.

[y]Average Adj. T/A is a rough estimate because of non-uniform number of harvests included.

Table 3. Yields of preliminary OSU green bean lines, June 27 planting, Corvallis, 2000.[z]

Line	Av. Stand	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Av. Adj. T/A 50%[y]	Av. Adj. T/A 60%[y]
91G	140	63	54	9.3	9.7*	8.8*	9.6	8.8
		65	37	10.8	9.4	8.7		
OR 54	122	64	70	8.5	10.2	9.2	10.8	9.8
		65	63	10.3	11.6	10.5*		
		66	50	10.6	10.6*	9.7		
5635	140	64	74	9.1	11.3	10.2	11.5	10.4
		65	69	10.4	12.4	11.2*		
		66	55	10.2	10.7*	9.8		
5643	140	63	71	8.6	10.4	9.3	10.4	9.4
		65	64	9.1	10.4	9.4*		
		66	56	9.9	10.5*	9.6		
5669	140	62	68	8.4	9.9	9.0	9.4	8.6
		64	54	9.3	9.7*	8.9*		
		66	33	10.2	8.5	7.9		
5618	140	63	66	8.2	9.5	8.6*	9.5	8.7
		65	43	10.2	9.5*	8.7		
		66	37	11.0	9.6	8.9		
5699	139	63	61	9.5	10.5*	9.6*	9.9	9.1
		65	43	9.9	9.2	8.5		
5706	140	64	61	9.0	9.9*	9.0*	9.2	8.5
		66	33	10.3	8.5	8.0		
5793	140	59	70	8.1	9.7	8.8	9.4	8.6
		62	59	9.3	10.1*	9.2*		
		64	38	9.7	8.5	7.9		

[z]Mean of 4 replications; subplots of 5' were harvested from double 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. 50% = tons/acre adjusted to 50% 1-4 sieve; adj. 60% = tons/acre adjusted to 60% 1-4 sieve. Analysis of variance (Table 5) was calculated using the harvest marked with *.

[y]Average Adj. T/A is a rough estimate because of non-uniform number of harvests included.

Table 4. Dollar return/acre for standard OSU bean lines, Corvallis, 2000.[z]

Trial	Line	Harvest 1			Harvest 2			Harvest 3			Harvest 4			Harvest 5			Avg.
		Days	%	$	Days	%	$	Days	%	$	Days	%	$	Days	%	$	$/A[y]
1	91G	75	60	1329	76	47	1251	79	36	1306							1295
29-Apr	OR 54	76	86	1168	78	69	1260	79	56	1449	80	47	1251	82	38	1327	1291
	5635	76	80	1117	78	63	1136	79	57	1350	80	51	1408	82	45	1459	1294
	5643	76	79	1408	79	54	1460	80	43	1380							1416
	5669	76	61	1180	78	52	1275	79	47	1363	80	46	1222				1260
2	91G	66	70	1641	69	46	1464	70	31	1417							1507
16-May	OR 54	69	61	1514	71	41	1542	73	27	1385							1480
	5635	69	75	1901	71	51	1513	73	37	1586							1667
	5643	67	90	1643	69	66	1538	71	46	1506							1562
	5669	66	85	1898	69	50	1576	71	32	1471							1648
	5618	66	89	1466	69	54	1494	71	32	1214							1391
	5699	65	74	1573	67	64	1598	69	46	1569							1580
	5706	69	55	1536	71	35	1287										1412
	5793	63	94	1330	65	77	1391	67	58	1355							1359
3	91G	65	54	1621	66	52	1712	68	38	1790							1708
30-May	OR 54	66	73	1986	69	52	1906	70	44	2181							2024
	5635	66	73	1952	69	54	2067	70	47	1928							1982
	5643	66	67	1768	69	52	2105										1937
	5669	64	68	1701	66	57	1795	69	39	1841							1779
4	91G	63	54	1547	65	37	1583										1565
27-Jun	OR 54	64	70	1653	65	63	1896	66	50	1778							1776
	5635	64	74	1847	65	69	2032	66	55	1770							1883
	5643	63	71	1673	65	64	1696	66	56	1714							1694
	5669	62	68	1627	64	54	1623	66	33	1432							1561
	5618	63	66	1575	65	43	1582	66	37	1630							1596
	5699	63	61	1747	65	43	1508										1628
	5706	64	61	1637	66	33	1435										1536
	5793	59	70	1564	62	59	1640	64	38	1425							1543

[z]Dollar values were calculated using the weight of graded beans, based on a value of $249 for 1-4 sieve pods; $92 for 5 and 6 sieve pods. Values will be lower than those reported in Table 5 because some beans are lost in the grading process.

[y]Average $/acre is a rough estimate because of non-uniform number of harvests included.

Table 5. Statistical comparison of yields of standard OSU lines, Corvallis, 2000.[z]

	Line	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average Trials 2 & 4	Average Trials 1-5
T/A	91G	7.8	9.1	10.4	9.7	9.7	9.4	9.3
adj. 50%	OR 54	7.9	9.2	11.5	10.6	9.9	9.9	9.8
	5635	8.4	9.4	12.4	10.7	10.1	10.1	10.2
	5643	9.0	9.0	12.8	10.5		9.8	
	5669	7.8	9.7	10.9	9.7	10.7	9.7	9.8
	5618		9.0		9.5		9.3	
	5699		9.4		10.5		10.0	
	5706		9.4		9.9		9.7	
	5793		8.5		10.1		9.3	
	LSD @ 5%	NS	NS	2.4	NS	NS	NS	0.6
T/A	91G	7.5	9.0	9.2	8.8	8.8	8.9	8.7
adj.60%	OR 54	8.1	8.5	10.6	10.5	10.4	9.5	9.6
	5635	7.6	8.6	11.4	11.2	9.3	9.9	9.6
	5643	8.3	8.8	10.2	9.4		9.1	
	5669	6.5	8.9	10.0	8.9	9.5	8.9	8.8
	5618		8.2		8.6		8.4	
	5699		8.9		9.6		9.3	
	5706		8.6		9.0		8.8	
	5793		7.8		9.2		8.5	
	LSD @ 5%	1.5	NS	2.1	1.4	1.6	NS	0.9

[z]Based on one selected harvest for each variety, usually the harvest closest to 50% 1-4 sieve (for adj 50%) or 60% 1-4 sieve (for adj 60%), marked with a * in Tables 1-3 and Table 11. Yields are based on field yields of 1-6 sieve beans.

Table 6. Statistical comparison of dollar value of standard OSU lines, Corvallis, 2000.[z]

	Line	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average Trials 2 & 4	Average Trials 1-5
$/A	91G	1330	1553	1817	1636	1627	1595	1593
adj. 50%	OR 54	1336	1576	2025	1802	1699	1689	1688
	5635	1433	1600	2163	1828	1717	1714	1748
	5643	1537	1542	2218	1785		1664	
	5669	1325	1656	1921	1649	1823	1653	1675
	5618		1526		1628		1577	
	5699		1605		1788		1697	
	5706		1604		1685		1645	
	5793		1441		1707		1574	
	LSD @ 5%	NS	209	NS	NS	NS	NS	NS
$/A	91G	1107	1677	1758	1636	1627	1657	1561
adj. 60%	OR 54	1508	1583	2025	1951	1920	1767	1797
	5635	1409	1600	2163	2083	1717	1842	1794
	5643	1537	1630	1982	1745		1688	
	5669	1214	1656	1921	1649	1773	1653	1643
	5618		1526		1603		1565	
	5699		1654		1788		1721	
	5706		1604		1685		1645	
	5793		1441		1707		1574	
	LSD @ 5%	283	NS	NS	265	NS	NS	170

[z]Based on one selected harvest for each variety, usually the harvest closest to 50% 1-4 sieve (for adj 50%) or 60% 1-4 sieve (for adj 60%), marked with a * in Tables 1-3 and Table 11. Yields are based on field yields of 1-6 sieve beans.

Table 7. Performance of advanced small sieve green bean varieties on two planting dates, Corvallis, 2000.

Trial	Line	Days	Percent Sieve Size[z]					Tons/Acre Sieve Size					Graded Total[x]	$/Acre[w]
			1	2	3	4	5	1	2	3	4	5		
1	5613	74	11	32	57	1	0	0.38	1.14	2.07	0.04	0.00	3.63	805
29-Apr		76	9	27	62	2	0	0.38	1.14	2.57	0.07	0.00	4.17	925
		79	5	15	70	10	0	0.27	0.82	3.92	0.58	0.00	5.58*	1239
	5804	74	4	12	61	23	1	0.26	0.79	3.99	1.49	0.04	6.56	1449
		76	3	9	52	36	1	0.20	0.60	3.63	2.50	0.07	7.00*	1537
		79	2	6	47	43	1	0.15	0.46	3.55	3.26	0.11	7.54	1650
	5819	76	2	7	33	48	10	0.15	0.46	2.36	3.41	0.73	7.11*	1416
		79	2	5	17	47	28	0.12	0.35	1.20	3.30	1.96	6.96	1103
	5842	74	4	13	55	27	0	0.32	0.95	3.99	1.96	0.00	7.21	1601
		76	2	6	39	47	5	0.15	0.46	2.83	3.41	0.36	7.21*	1521
		79	2	6	26	50	17	0.16	0.49	2.25	4.31	1.49	8.70	1601
		80	2	5	31	51	13	0.12	0.35	2.28	3.77	0.94	7.47	1449
	Minuette	76	4	13	60	23	0	0.25	0.76	3.52	1.38	0.00	5.91	1312
		79	2	7	41	46	3	0.16	0.49	2.94	3.30	0.22	7.11*	1529
		80	2	7	41	44	6	0.15	0.46	2.86	3.12	0.44	7.03	1465
3	5613	65	7	20	71	3	0	0.53	1.60	5.80	0.25	0.00	8.19	1819
30-May		66	8	23	66	3	0	0.48	1.44	4.10	0.18	0.00	6.20	1376
		68	6	17	70	7	0	0.48	1.44	5.80	0.62	0.00	8.34*	1851
		69	5	15	64	15	0	0.35	1.06	4.46	1.05	0.00	6.92	1537
	5804	62	4	13	56	25	2	0.33	0.98	4.13	1.85	0.11	7.40	1618
		64	3	8	43	36	10	0.22	0.65	3.44	2.86	0.80	7.98*	1593
		66	2	7	43	38	10	0.23	0.68	4.02	3.55	0.94	9.43	1883
	5819	62	4	12	39	36	10	0.29	0.87	2.94	2.72	0.76	7.58	1513
		64	3	8	33	38	18	0.25	0.76	3.08	3.55	1.67	9.35*	1698
		66	2	7	21	36	34	0.23	0.68	1.99	3.37	3.19	9.53	1392
		69	1	4	17	31	44	0.15	0.46	1.89	3.52	5.08	11.46	1336
	5842	62	4	11	41	30	14	0.29	0.87	3.12	2.25	1.09	7.61	1449
		64	3	7	31	39	20	0.22	0.65	2.72	3.41	1.78	8.85*	1553
		66	2	5	23	37	32	0.19	0.57	2.57	4.10	3.59	11.09	1650
		69	1	4	16	27	49	0.11	0.33	1.41	2.47	4.46	9.03	958
	Minuette	66	9	26	53	8	4	0.42	1.25	2.54	0.36	0.18	4.75	1014
		68	3	9	62	25	1	0.21	0.63	4.17	1.70	0.04	6.74	1489
		69	2	6	55	34	3	0.15	0.44	3.95	2.47	0.22	7.21*	1553

[z]Percent calculated as % of total of 1-6 sieve beans.

[x]Total weight of graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 10 because some beans are lost in the grading process. Occasional 6 sieve are not shown in table, but are included in graded total.

[w]$/acre based on $222/ton for 1-4 sieve; $0/ton for 5-6 sieve.

Table 8. Performance of preliminary small sieve green bean varieties, May 16 planting, Corvallis, 2000.

		Percent Sieve Size[z]					Tons/Acre Sieve Size					Graded	
Line	Days	1	2	3	4	5	1	2	3	4	5	Total[x]	$/Acre[w]
5613	64	14	41	45	1	0	0.59	1.77	1.92	0.04	0.00	4.31	958
	66	6	19	71	4	0	0.33	0.98	3.59	0.18	0.00	5.08	1127
	69	5	16	72	6	1	0.35	1.06	4.71	0.40	0.04	6.56*	1449
5757	69	2	7	42	40	10	0.11	0.33	2.07	1.96	0.47	4.93*	990
	71	2	5	28	40	24	0.11	0.33	1.81	2.54	1.56	6.38	1062
5798	64	5	14	45	32	5	0.23	0.68	2.18	1.52	0.22	4.82	1022
	66	3	9	38	38	13	0.18	0.54	2.18	2.18	0.73	5.80*	1127
	69	2	5	24	35	34	0.10	0.30	1.56	2.25	2.14	6.38	934
5800	63	7	20	60	14	0	0.38	1.14	3.48	0.80	0.00	5.80	1288
	65	5	14	47	34	2	0.30	0.90	3.08	2.21	0.11	6.60	1441
	66	3	10	38	44	5	0.24	0.73	2.86	3.30	0.40	7.54*	1585
5804	63	7	21	66	6	0	0.37	1.11	3.48	0.29	0.00	5.26	1167
	66	4	13	47	34	3	0.31	0.92	3.48	2.47	0.18	7.36	1593
	69	2	6	32	45	15	0.15	0.44	2.43	3.37	1.12	7.50*	1416
5819	64	7	20	42	30	2	0.39	1.17	2.47	1.74	0.11	5.87	1280
	66	3	10	36	41	10	0.24	0.73	2.72	3.05	0.73	7.47*	1497
	69	2	6	22	39	31	0.16	0.49	1.81	3.26	2.57	8.30	1272
5835	64	7	22	49	20	3	0.40	1.20	2.68	1.09	0.15	5.51	1191
	66	3	10	37	39	11	0.21	0.63	2.28	2.39	0.69	6.20*	1223
	69	2	5	17	33	45	0.13	0.38	1.31	2.57	3.52	7.90	974
5842	64	6	18	44	29	4	0.37	1.11	2.79	1.85	0.25	6.38	1360
	66	3	10	35	38	14	0.24	0.73	2.54	2.72	1.02	7.25*	1384
	69	2	5	21	36	37	0.14	0.41	1.89	3.23	3.34	9.03	1255
5844	64	11	33	49	8	0	0.53	1.58	2.36	0.40	0.00	4.86	1078
	67	4	13	59	22	2	0.29	0.87	4.02	1.52	0.15	6.85*	1489
	69	2	6	47	40	5	0.17	0.52	3.84	3.23	0.36	8.12	1722
5870	66	10	31	56	3	0	0.59	1.77	3.19	0.18	0.00	5.73	1272
	67	9	27	63	2	0	0.52	1.55	3.63	0.11	0.00	5.80*	1288
	69	6	19	64	10	1	0.34	1.01	3.41	0.54	0.07	5.37	1175
5912	64	11	32	52	5	0	0.51	1.52	2.43	0.25	0.00	4.71	1046
	67	5	16	61	17	1	0.34	1.01	3.95	1.12	0.04	6.45*	1424
	69	3	9	58	29	2	0.19	0.57	3.88	1.92	0.11	6.67	1457
5944	64	11	33	52	4	0	0.37	1.11	1.74	0.15	0.00	3.37	748
	67	5	15	66	14	1	0.25	0.76	3.37	0.73	0.04	5.15*	1135
	69	2	7	58	30	2	0.15	0.46	3.70	1.89	0.15	6.36	1376
5947	66	10	29	53	9	0	0.51	1.52	2.83	0.47	0.00	5.33	1183
	67	5	15	54	21	5	0.32	0.95	3.30	1.31	0.29	6.16	1304
	69	4	12	39	39	6	0.27	0.82	2.76	2.76	0.44	7.03*	1465
Minuette	67	11	34	53	2	0	0.52	1.55	2.43	0.07	0.00	4.57	1014
	69	4	11	70	15	0	0.22	0.65	4.02	0.83	0.00	5.73	1272
	71	2	5	51	41	2	0.12	0.35	3.59	2.90	0.11	7.07*	1545
Medinah	67	19	56	26	0	0	0.81	2.42	1.12	0.00	0.00	4.35	966
	69	12	37	50	1	0	0.60	1.79	2.47	0.04	0.00	4.89	1086
	70	12	37	50	1	0	0.63	1.88	2.54	0.04	0.00	5.08*	1127

[z]Percent calculated as % of total of 1-6 sieve beans.

[x]Total weight of graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 10 because some beans are lost in the grading process. Occasional 6 sieve are not shown in table, but are included in graded total.

[w]$/acre based on $222/ton for 1-4 sieve; $0/ton for 5-6 sieve.

Table 9. Performance of preliminary small sieve green bean varieties, June 27 planting, Corvallis, 2000.

		Percent Sieve Size[z]					Tons/Acre Sieve Size						
Line	Days	1	2	3	4	5	1	2	3	4	5	Graded Total[x]	$/Acre[w]
5613	62	21	35	37	7	0	0.98	1.67	1.74	0.33	0.00	4.71	1046
	64	13	32	46	9	0	0.76	1.92	2.76	0.54	0.00	5.98	1328
	66	8	19	49	22	1	0.65	1.56	3.99	1.81	0.07	8.08*	1778
5757	64	17	22	19	36	6	0.58	0.76	0.65	1.23	0.22	3.44*	716
	66	12	20	13	37	19	0.54	0.91	0.58	1.67	0.87	4.57	821
5798	62	6	11	16	53	15	0.47	0.87	1.31	4.31	1.20	8.16	1545
	64	3	6	10	47	34	0.25	0.54	0.83	3.99	2.86	8.48*	1247
	66	5	5	5	29	57	0.44	0.47	0.44	2.61	5.18	9.17	877
5800	59	8	17	29	44	2	0.58	1.20	2.10	3.15	0.11	7.14	1561
	62	7	10	23	59	2	0.54	0.76	1.78	4.60	0.18	7.87*	1706
5804	59	10	20	35	34	2	0.73	1.45	2.57	2.54	0.15	7.43	1618
	62	7	15	33	44	10	0.58	1.20	2.68	3.59	0.07	8.12*	1787
5819	59	8	17	25	45	5	0.54	1.16	1.70	3.08	0.36	6.85	1441
	62	5	10	18	57	10	0.40	0.83	1.41	4.53	0.83	8.01*	1593
5835	62	8	14	21	48	10	0.65	1.12	1.70	3.88	0.80	8.16	1634
	64	4	8	12	54	22	0.36	0.73	1.02	4.68	1.92	8.70*	1505
	66	4	7	5	33	50	0.40	0.65	0.47	3.15	4.89	9.72	1038
5842	59	9	21	20	40	10	0.69	1.52	1.45	2.97	0.73	7.36	1473
	62	5	13	15	46	22	0.40	1.05	1.20	3.66	1.74	8.05*	1400
5844	62	19	21	29	28	2	1.52	1.67	2.28	2.21	0.15	7.83	1706
	64	5	19	32	39	5	0.36	1.34	2.21	2.72	0.33	6.96	1473
	66	4	9	19	49	19	0.36	0.83	1.74	4.35	1.67	8.95*	1618
5870	62	10	38	49	3	0	0.62	2.39	3.05	0.18	0.00	6.24	1384
	64	4	36	51	9	0	0.29	2.36	3.34	0.62	0.00	6.60*	1465
	66	4	20	46	29	1	0.33	1.60	3.63	2.28	0.07	7.90	1738
5912	62	10	34	39	17	1	0.54	1.96	2.21	0.98	0.04	5.73	1263
	64	4	22	46	27	1	0.29	1.49	3.08	1.78	0.04	6.67*	1473
	66	3	10	43	42	2	0.25	0.73	3.26	3.23	0.15	7.61	1658
5944	62	7	34	47	13	0	0.44	2.07	2.86	0.80	0.00	6.16	1368
	64	5	21	48	26	0	0.33	1.38	3.08	1.70	0.00	6.49*	1441
	66	4	12	37	45	2	0.29	0.87	2.76	3.37	0.18	7.47	1618
5947	62	12	29	32	26	2	0.76	1.92	2.07	1.70	0.11	6.56	1432
	64	8	17	27	44	4	0.62	1.31	2.07	3.37	0.29	7.65	1634
	66	6	8	12	54	20	0.54	0.76	1.12	4.97	1.85	9.24*	1642
Minuette	63	12	31	40	17	0	0.47	1.23	1.60	0.69	0.00	3.99	885
	65	6	15	40	40	1	0.33	0.83	2.28	2.25	0.04	5.73	1263
	66	6	10	27	55	3	0.40	0.69	1.81	3.70	0.18	6.78*	1465
Medinah	64	27	65	9	0	0	0.98	2.39	0.33	0.00	0.00	3.70	821
	66	14	46	40	0	0	0.69	2.25	1.96	0.00	0.00	4.89*	1086

[z]Percent calculated as % of total of 1-6 sieve beans.

[x]Total weight of graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 10 because some beans are lost in the grading process. Occasional 6 sieve are not shown in table, but are included in graded total.

[w]$/acre based on $222/ton for 1-4 sieve; $0/ton for 5-6 sieve.

Table 10. Statistical comparison of yields and dollar return of small sieve green bean lines, Corvallis, 2000.[z]

	Variety	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average Trials 2 & 4	Average Trials 1-4
T/A	5613	5.8	6.8	8.8	8.5	5.7	7.7	7.5
	5757		5.0		3.7		4.4	
	5798		6.1		8.7		7.4	
	5800		7.6		7.8		7.7	
	5804	7.3	8.0	8.3	8.4		8.2	8.0
	5819	7.3	7.7	9.5	8.4		8.1	8.2
	5835		6.4		8.8		7.6	
	5842	7.5	7.5	9.3	8.4		8.0	8.2
	5844		7.2		9.3	6.1	8.3	
	5870		6.1		6.9		6.5	
	5912		6.7		7.0		6.9	
	5944		5.4		6.8		6.1	
	5947		7.3		9.6		8.5	
	Minuette	7.4	7.2	7.6	6.9	4.7	7.1	7.3
	Medinah		5.3		5.1	5.5	5.2	
	LSD @ 5%	1.5	1.2	1.5	1.6	NS	1.7	0.8
$/A	5613	1296	1489	2067	1874	1272	1682	1682
	5757		990		769		880	
	5798		1190		1285		1238	
	5800		1601		1698		1650	
	5804	1601	1499	1713	1850		1675	1666
	5819	1452	1548	1766	1666		1607	1608
	5835		1259		1530		1395	
	5842	1574	1426	1677	1457		1442	1534
	5844		1552		1683	1311	1618	
	5870		1336		1537		1437	
	5912		1464		1553		1509	
	5944		1183		1513		1348	
	5947		1525		1700		1613	
	Minuette	1548	1585	1673	1496	1038	1541	1576
	Medinah		1167		1135	1231	1151	
	LSD @ 5%	NS	243	331	336	NS	247	NS

[z]Based on one selected harvest for each variety in each trial, which was the last harvest, (highest $/A) unless sieve size distribution or notes indicated the variety was overmature (marked with * on Tables 7,8,9 & 11). Yields are field yields of 1-6 sieve beans.

Table 11. Performance of commercial green bean varieties, June 13 planting, Corvallis, 2000.

Variety	Source	Intended Use	Days	Percent Sieve Size[z]						Tons/Acre Sieve Size						Graded Total[x]	$/Acre[w]
				1	2	3	4	5	6	1	2	3	4	5	6		
91G	OSU	5 sieve	62	6	11	16	45	22	0	0.47	0.91	1.27	3.59	1.74	0.00	7.98	1713
			63	5	9	11	36	38	1	0.40	0.80	0.91	3.01	3.23	0.11	8.45*	1580
			65	4	6	5	23	56	6	0.40	0.62	0.47	2.28	5.44	0.54	9.75	1489
OR 54	OSU	5 sieve	62	5	12	20	41	21	1	0.44	1.02	1.60	3.37	1.70	0.07	8.19	1761
			63	4	9	15	38	33	2	0.33	0.83	1.34	3.41	2.94	0.18	9.03	1758
			65	3	7	7	25	53	6	0.33	0.69	0.73	2.65	5.58	0.58	10.55*	1659
5635	OSU	5 sieve	62	6	13	20	45	17	0	0.44	1.02	1.52	3.41	1.27	0.00	7.65	1705
			63	4	11	13	44	26	2	0.33	0.83	0.98	3.37	1.96	0.15	7.61	1565
			65	4	7	9	33	46	2	0.33	0.69	0.80	3.05	4.31	0.18	9.35*	1623
SB 4247	Rogers	5 sieve	62	6	13	18	43	20	1	0.44	1.02	1.38	3.34	1.56	0.07	7.79	1685
			63	5	10	11	38	34	2	0.36	0.76	0.87	2.94	2.68	0.18	7.79*	1491
			65	4	4	7	22	57	5	0.40	0.40	0.73	2.25	5.73	0.40	10.04	1516
SB 4248	Rogers	5 sieve	60	5	10	12	37	36	1	0.44	0.94	1.05	3.30	3.23	0.07	9.03	1730
			62	2	8	10	36	43	2	0.22	0.73	0.91	3.37	4.10	0.15	9.46	1690
			63	4	7	8	31	48	3	0.40	0.69	0.83	3.23	4.97	0.29	10.4*	1765
5669	OSU	4-5 sieve	62	3	10	16	49	23	0	0.25	0.83	1.38	4.24	1.99	0.00	8.70	1853
			63	3	9	13	37	38	1	0.25	0.83	1.27	3.59	3.70	0.07	9.72	1827
			65	2	5	8	32	49	3	0.18	0.58	0.87	3.44	5.26	0.36	10.69*	1781
SB 4249	Rogers	4-5 sieve	60	4	10	14	45	27	1	0.36	0.91	1.27	4.13	2.43	0.07	9.17	1891
			62	3	9	12	47	28	1	0.29	0.80	1.02	4.06	2.43	0.11	8.70	1768
			63	4	6	10	38	40	2	0.36	0.65	1.02	3.88	4.10	0.22	10.22*	1868
Castano	Rogers	4 sieve	58	6	16	21	51	6	0	0.36	0.91	1.16	2.90	0.33	0.00	5.66	1194
			60	4	10	12	63	11	0	0.25	0.69	0.83	4.24	0.76	0.00	6.78*	1382
			62	4	7	11	58	19	1	0.29	0.54	0.83	4.35	1.45	0.04	7.50	1443

Table 11. Performance of commercial green bean varieties, June 14 planting, Corvallis, 2000 (cont.).

Variety	Source	Intended Use	Days	Percent Sieve Size[z]						Tons/Acre Sieve Size						Graded Total[x]	$/Acre[w]
				1	2	3	4	5	6	1	2	3	4	5	6		
Festina	Asgrow	4 sieve	59	2	9	16	61	12	0	0.11	0.54	0.98	3.70	0.73	0.00	6.05*	1228
			62	4	7	9	54	26	0	0.22	0.40	0.54	3.23	1.56	0.00	5.95	1092
			63	2	6	7	52	33	0	0.11	0.36	0.44	3.15	1.99	0.00	6.05	1057
K 159	Crites Moscow	4 sieve	62	9	19	23	35	13	0	0.54	1.12	1.34	2.07	0.76	0.00	5.84*	1175
			63	9	17	18	35	20	0	0.51	0.98	1.02	1.99	1.16	0.04	5.69	1085
			65	7	11	14	35	33	0	0.44	0.73	0.91	2.21	2.10	0.00	6.38	1113
K 311	Crites Moscow	4 sieve	59	5	13	18	59	5	0	0.29	0.73	1.02	3.26	0.25	0.00	5.55	1180
			62	6	12	16	58	9	0	0.33	0.69	0.91	3.30	0.51	0.00	5.73*	1186
			63	4	8	11	50	27	0	0.29	0.58	0.80	3.55	1.96	0.00	7.18	1308
K180	Crotes Moscow	3-4 sieve	59	7	21	33	37	2	0	0.25	0.76	1.16	1.31	0.07	0.00	3.55	768
			62	5	15	26	50	4	0	0.22	0.69	1.20	2.28	0.18	0.00	4.57*	976
			63	6	13	22	53	6	0	0.29	0.65	1.16	2.76	0.33	0.00	5.18	1091
Savannah	Harris Moran	3-4 sieve	59	14	40	37	9	0	0	0.62	1.74	1.63	0.40	0.00	0.00	4.39	961
			62	7	33	44	16	0	0	0.36	1.85	2.43	0.91	0.00	0.00	5.55*	1215
			63	4	22	42	31	1	0	0.25	1.31	2.54	1.89	0.04	0.00	6.02	1313
Igloo	Pure Line	3-4 sieve	58	7	22	33	37	2	0	0.44	1.38	2.14	2.36	0.11	0.00	6.42	1390
			59	4	16	28	48	4	0	0.25	1.09	1.96	3.30	0.29	0.00	6.89*	1469
			62	4	12	23	54	7	0	0.29	0.91	1.74	4.06	0.51	0.00	7.50	1575
PLS 86	Pure Line	3-4 sieve	58	7	26	33	35	0	0	0.29	1.16	1.45	1.56	0.00	0.00	4.46	976
			59	5	19	29	47	0	0	0.25	0.91	1.34	2.18	0.00	0.00	4.68*	1024
			62	5	12	25	55	3	0	0.29	0.69	1.41	3.08	0.18	0.00	5.66	1214
5613	OSU	3 sieve	59	10	35	52	3	0	0	0.54	1.92	2.83	0.15	0.00	0.00	5.44*	1207
			62	7	25	64	4	0	0	0.47	1.78	4.50	0.25	0.00	0.00	7.00	1553
5844	OSU	3 sieve	60	6	18	31	43	3	0	0.33	1.05	1.81	2.57	0.18	0.00	5.95*	1280
			62	3	17	32	44	4	0	0.18	0.98	1.89	2.57	0.22	0.00	5.84	1247
			63	3	14	25	48	10	0	0.18	0.83	1.56	2.94	0.62	0.00	6.13	1223

Table 11. Performance of commercial green bean varieties, June 14 planting, Corvallis, 2000 (cont.).

Variety	Source	Intended Use	Days	Percent Sieve Size[z]						Tons/Acre Sieve Size						Graded Total[x]	$/Acre[w]
				1	2	3	4	5	6	1	2	3	4	5	6		
Minuette	Harris Moran	3 sieve	62	8	25	52	15	0	0	0.36	1.16	2.39	0.69	0.00	0.00	4.60*	1022
			63	5	14	45	36	1	0	0.25	0.69	2.21	1.78	0.04	0.00	4.97	1094
			65	5	8	21	61	5	0	0.33	0.47	1.31	3.70	0.29	0.00	6.09	1288
HMX 5991	Harris Moran	2-3 sieve	63	16	44	34	7	0	0	0.76	2.14	1.63	0.33	0.00	0.00	4.86	1078
			65	10	27	47	16	0	0	0.62	1.67	2.86	0.94	0.00	0.00	6.09*	1352
			66	5	25	51	19	1	0	0.33	1.63	3.37	1.27	0.04	0.00	6.63	1465
Medinah	Rogers	2-3 sieve	60	12	77	11	0	0	0	0.58	3.70	0.54	0.00	0.00	0.00	4.82	1070
			62	10	65	25	0	0	0	0.54	3.44	1.34	0.00	0.00	0.00	5.33*	1183
			63	7	55	37	1	0	0	0.40	3.15	2.14	0.04	0.00	0.00	5.73	1272
XP 390	Asgrow	2-3 sieve	62	12	33	46	9	0	0	0.54	1.56	2.14	0.44	0.00	0.00	4.68*	1038
			63	9	20	49	22	0	0	0.44	0.98	2.36	1.09	0.00	0.00	4.86	1078
			65	5	14	39	40	1	0	0.29	0.76	2.14	2.18	0.07	0.00	5.44	1191
PLS 87	Pure Line	2-3 sieve	59	10	36	47	7	0	0	0.65	2.43	3.23	0.51	0.00	0.00	6.82	1513
			62	8	37	45	10	0	0	0.62	2.83	3.44	0.73	0.00	0.00	7.61*	1690
			63	6	22	55	16	1	0	0.51	1.74	4.35	1.31	0.04	0.00	7.94	1754

[z]Percent calculated as % of total of 1-6 sieve beans.

[x]Total weight of the graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 12 because some beans are lost in the grading process.

[w]$/acre based on $249/ton for 1-4 sieve and $92/ton for 5-6 sieve for full sieve and 4-5 sieve beans; $219/ton for 1-4 sieve and $84/ton for 5-6 sieve for 4 sieve and 3-4 sieve beans; and $222/ton for 1-4 sieve and $0/ton for 5-6 sieve for small sieve beans.

Table 12. Statistical comparison of yields and dollar return of commercial green bean lines, Corvallis, 2000.

Variety	Intended Use	T/A Unadjusted	T/A Adjusted[y]	$/A
91G	full sieve	8.7	9.7	1627
OR 54	full sieve	10.8	9.9	1699
5635	full sieve	9.9	10.1	1717
SB 4247	full sieve	8.0	9.1	1533
SB 4248	full sieve	10.5	10.5	1790
5669	4-5 sieve	10.9	10.7	1823
SB 4249	4-5 sieve	10.5	11.3	1915
Castano	4 sieve	7.0	7.0	1434
Festina	4 sieve	6.5	6.5	1316
K 159	4 sieve	6.0	6.0	1205
K 311	4 sieve	6.0	6.0	1238
K 180	3-4 sieve	4.8	4.8	1022
Savannah	3-4 sieve	5.8	5.8	1270
Igloo	3-4 sieve	7.3	7.3	1554
PLS 86	3-4 sieve	4.9	4.9	1064
5613	3 sieve	5.7	5.7	1272
5844	3 sieve	6.1	6.1	1311
Minuette	3 sieve	4.7	4.7	1038
HMX 5991	2-3 sieve	6.5	6.5	1432
Medinah	2-3 sieve	5.5	5.5	1231
XP 390.	2-3 sieve	4.9	4.9	1094
PLS 87	2-3 sieve	7.9	7.9	1754
SB 4251	wax romano	8.9	8.9	
LSD @5%		1.7	1.7	333

[z]Based on one selected harvest for each variety (marked with * on Table 11), which was the harvest closest to optimal based on that variety's intended use (50% 1-4 sieve for full sieve). Yields are field yields of 1-6 sieve beans.

[y]Full sieve and 4-5 sieve beans were adjusted to 50% 1-4 sieve; all others were unadjusted

Table 13. Fusarium root rot infection, Corvallis, 2000.

Line	Score[z] Rep 1	Rep 2	Average	Notes
91G	3.0	3.5	3.25	
OR 54	4.0	5.0	4.50	
5446	4.0	3.5	3.75	
5600	4.0	4.5	4.25	
5635	3.5	4.0	3.75	
5640	3.5	3.0	3.25	
5643	3.5	2.5	3.00	
5644	4.0	3.0	3.50	
5651	4.5	3.0	3.75	
5669	3.5	4.0	3.75	
5681	5.0	4.5	4.75	
5682	4.0	3.5	3.75	
5683	4.0	3.5	3.75	
5684	4.5	4.0	4.25	
5692	4.5	3.0	3.75	
5697	3.5	5.0	4.25	
5698	4.0	3.0	3.50	
5699	4.5	4.0	4.25	
5701	3.0	4.5	3.75	
5705	5.0	4.5	4.75	
5706	3.0	4.5	3.75	
5709	4.0	3.0	3.50	
5711	5.0	4.0	4.50	
5712	3.0	3.0	3.00	
5713	3.0	3.5	3.25	
5724	5.0	3.5	4.25	
5730	4.0	4.0	4.00	
5731	3.0	4.5	3.75	
5732	4.5	4.0	4.25	
5733	3.0	2.0	2.50	
5735	4.5	3.5	4.00	
5736	4.5	3.5	4.00	
5747	4.0	4.0	4.00	
5757	4.5	4.5	4.50	
5761	3.0	4.5	3.75	
5769	4.0	3.0	3.50	
5778	4.0	3.0	3.50	
5792	4.0	4.0	4.00	
5793	3.0	4.5	3.75	
5798	4.0	4.5	4.25	
5800	4.0	3.5	3.75	
5802	4.5	5.0	4.75	
5804	2.5	4.0	3.25	
5805	3.0	4.0	3.50	
5809	3.0	5.0	4.00	

Table 13. Fusarium root rot infection, Corvallis, 2000 (cont).

Line	Score[z] Rep 1	Rep 2	Average	Notes
5813	3.0	4.5	3.75	
5816	3.5	4.0	3.75	
5818	4.5	5.0	4.75	
5819	4.0	4.5	4.25	
B 7030-24	3.0	3.5	3.25	
B 7126-1-1-1	4.0	4.5	4.25	very late
B 7126-33-1-2	3.0	4.5	3.75	
B 7126-33-2-1	4.5	4.5	4.50	
B 7126-54-2-1	5.0	4.5	4.75	
B 7237-13	4.0	4.0	4.00	
B 7238-22	4.0	5.0	4.50	
B 7239-5-2	4.0	4.0	4.00	
B 7239-5-4	3.0	3.5	3.25	early
B 7239-11-2	4.0	4.0	4.00	
B 7240-2	3.5	4.0	3.75	late
DM3NY1	4.0	5.0	4.50	poor stand
DM4NY6	2.0	3.0	2.50	highly variable
DM6NY1	2.5	2.0	2.25	
FR 266	4.0	3.0	3.50	
Medinah	4.5	5.0	4.75	
Minuette	3.5	3.5	3.50	
NY 5517	3.5	4.0	3.75	
RR 4270	4.0	3.5	3.75	
RR 6950	1.5	1.0	1.25	
WIS 83RR	4.0	3.0	3.50	
WIS 46RR	3.0	2.0	2.50	
LSD @ 5%			1.26	

[z]Scores: 1-5 scale; 1=none or very slight surface infection, 5=roots mostly dead, plants stunted.

Table 14. White mold infection, Corvallis, 2000[z]

Line	White Mold Score					Yield[y]	Habit[x]
	Rep 1	Rep 2	Rep 3	Rep 4	AV	AV	AV
91G	7	7	9	8	7.75	2.75	2.00
Ore 54	4	8	9	9	7.50	3.50	2.50
5416	7	9	9	8	8.25	3.00	2.25
5600	8	8	8	8	8.00	3.75	2.00
5613	3	8	8	8	6.75	3.50	2.00
5630	4	8	3	6	5.25	3.25	2.00
5635	4	3	9	7	5.75	3.25	2.50
5669	5	8	5	8	6.50	3.00	2.00
5747	1	7	3	8	4.75	3.00	2.75
5819	3	3	4	5	3.75	1.75	1.75
5835	2	7	4	4	4.25	3.00	2.75
5842	9	9	9	9	9.00	1.75	1.00
5844	7	8	10	9	8.50	2.75	1.50
5870	3	4	7	5	4.75	3.00	2.50
5912	2	2	3	3	2.50	2.75	3.25
5944	2	2	2	3	2.25	3.00	2.75
5947	4	8	4	9	6.25	3.50	2.75
B7126-1-1-1	2	2	2	3	2.25	2.50	3.00
B7237-11-3	2	7	5	4	4.50	2.75	2.50
B7237-14-3	2	4	6	4	4.00	2.00	2.25
B7239-5-1	5	9	3	9	6.50	2.25	1.75
B7239-11-1	4	8	4	4	5.00	3.00	2.25
B7239-11-2	3	7	6	8	6.00	2.75	2.25
B7239-11-3	2	5	4	8	4.75	2.75	2.75
B7240-2	6	8	2	3	4.75	3.50	3.25
B7315-10-1-3-1	2	1	3	1	1.75	3.00	2.50
B7318-2-1-1-1	2	2	2	1	1.75	2.75	3.00
B7318-2-2-2-1	2	2	2	1	1.75	3.00	2.75
B7321-5-1-2-1	2	5	3	2	3.00	1.50	2.75
B7321-5-2-1-2	1	2	2	1	1.50	1.75	3.25
B7323-4-1-1-2	2	5	3	8	4.50	2.50	2.75
B7323-4-1-2-1	5	2	3	5	3.75	2.50	2.50
B7323-5-2-1-1	5	8	3	3	4.75	2.75	2.75
B7324-2-2-1-1	3	4	1	3	2.75	3.75	3.25
B7324-3-2-2-1	2	8	4	8	5.50	4.00	3.50
B7329-1-1-2-1	2	4	4	4	3.50	1.50	2.75
B7329-1-2-2-1	1	2	1	2	1.50	2.75	3.75
B7329-2-1-2-2	4	2	3	2	2.75	2.75	3.50
B7329-11-1-2-1	2	3	2	2	2.25	1.75	3.25
B7334-9-2-2-1	1	4	2	1	2.00	1.25	3.75
B7334-13-2	4	7	3	7	5.25	3.25	3.25
B7335-7-1-1-2	2	3	2	3	2.50	2.75	3.25
B7335-7-1-2-1	1	2	2	2	1.75	2.25	2.75
B7335-7-2-1-1	1	3	2	2	2.00	1.50	3.50

Table 14. White mold infection, Corvallis, 2000 (cont.)[z]

Line	White Mold Score					Yield[y]	Habit[x]
	Rep 1	Rep 2	Rep 3	Rep 4	AV	AV	AV
B7339-1-1-1-2	2	4	4	5	3.75	2.50	3.25
B7344-5-1-1	2	1	1	2	1.50	2.00	3.00
B7345-5-1-1-1	2	3	2	4	2.75	2.75	3.25
B7345-5-1-2-1	3	4	5	4	4.00	3.00	2.50
B7354-1-2-1-1	2	6	3	9	5.00	2.75	2.25
B7354-2-1-1-1	1	2	7	2	3.00	2.50	2.75
B7354-2-2-1-2	4	6	7	8	6.25	2.50	2.00
B7354-2-2-2-1	2	3	2	2	2.25	2.00	3.50
B7354-6-2-1	2	1	1	1	1.25	2.75	4.00
B7354-6-2-2	1	1	1	1	1.00	2.75	4.00
B7356-4-1-1	2	1	1	3	1.75	2.25	3.25
B7356-4-2-1	2	1	2	3	2.00	3.00	3.50
76-110	2	4	1	1	2.00	2.25	2.75
Minuette	2	7	4	3	4.00	2.75	2.75
Ex Rico	4	7	4	5	5.00	3.25	2.75
L192	2	1	1	2	1.50	2.00	2.75
MO 162	1	1	1	1	1.00	2.50	3.00
225846	1	2	2	2	1.75	1.50	2.50
824775	3	5	3	8	4.75	2.50	2.75
G122-1	1	3	2	2	2.00	3.25	3.00
G122-3	3	1	2	2	2.00	3.75	3.50
G122-8	3	2	2	1	2.00	3.50	3.50
SB 4123	2	5	5	4	4.00	2.75	3.25
FR 266	2	7	2	4	3.75	2.50	2.00
H9658	2	3	7	4	4.00	3.25	3.50
H9658-7	3	1	4	2	2.50	2.50	3.00
H9658-9	2	2	2	2	2.00	3.25	3.00
H9658-65	1	6	3	2	3.00	3.75	3.50
H9658-67	2	8	5	3	4.50	3.50	3.50
H9669-5B-1	3	3	3	3	3.00	4.00	3.00
H9669-5B-6	4	1	1	7	3.25	3.75	2.75
H9669-5B-8	1	1	2	6	2.50	3.75	2.50
I9365-31	3	2	1	4	2.50	4.00	3.00
NY5517	4	7	7	6	6.00	2.50	2.75
NY5521	8	9	6	4	6.75	2.00	1.50
NY5773	3	3	2	3	2.75	3.00	4.00
NY5774	2	7	2	8	4.75	3.50	3.50
NY5814-3	2	2	1	5	2.50	2.75	2.50
NY5950	3	4	2	3	3.00	2.50	2.75
NY5972	1	1	1	2	1.25	2.75	2.75
NYBS6637	2	1	1	1	1.25	2.50	3.00
NYBS6643	2	1	1	3	1.75	1.75	3.00
NYBS6653	1	2	2	2	1.75	2.75	2.25
NYBS6670	2	1	2	2	1.75	2.50	4.00

Table 14. White mold infection, Corvallis, 2000 (cont.)[z]

Line	White Mold Score					Yield[y]	Habit[x]
	Rep 1	Rep 2	Rep 3	Rep 4	AV	AV	AV
NYBS6671	1	6	3	6	4.00	2.75	2.50
NY1-6020-4	2	2	2	6	3.00	1.25	2.25
NY1-6020-5	1	2	3	5	2.75	1.50	2.50
NY-15-161-C	3	3	7	3	4.00	3.50	3.25
NY-15-161W	2	4	3	3	3.00	3.50	3.50
NY2-5984-1	2	1	3	2	2.00	3.75	3.00
NY-CT89-61	3	10	9	10	8.00	1.75	1.50
NY-CT89-63	2	8	8	8	6.50	3.25	2.75
NY-CT89-124	5	9	4	3	5.25	2.50	2.75
PI207130-2-4	1	1	2	2	1.50	1.75	2.25
PI207130-2-8	2	1	2	2	1.75	2.50	2.50
PI290990-4-1	3	1	4	2	2.50	2.25	3.00
LSD @ 5%					2.18	0.75	0.75

[z]White mold scores: 1-10, 1 = low incidence, no symptoms observed, 10 = high incidence, all plants in plot infected

[y]Visual observation of yield: 0 = no bean set, 4 = high bean set.

[x]Upright habit: 1 = flat, 4 = vertically upright.

Table 15. Correlation Matrix of White Mold, Yield & Habit, Corvallis, 2000

	Rep	White Mold	Yield	Upright
Rep	1.00	0.17**	0.02	-0.08
White Mold		1.00	0.08	-0.52**
Yield			1.00	0.18**
Upright				1.00

**values are highly significantly different from r = 0

Table 16. Comparison of white mold field averages and straw test averages, Corvallis, 2000, 1999, & 1998.

	White Mold Field Score Average[z]				White Mold Straw Test Average[y]			
Line	2000 Ave.	1999 Ave.	1998 Ave.	Overall Ave.[x]	2000 Ave.	1999 Ave.	1998 Ave	Overall Ave.[w]
91G	7.75	8.50	6.75	7.67	7.44	8.29	5.53	7.09
Ore 54	7.50	9.00	7.25	7.92	7.93	6.07		
5416	8.25	9.00	6.75	8.00	8.58		6.38	
5600	8.00	7.75	4.75	6.83	8.29	9.00	6.43	7.90
5613	6.75	9.25	7.25	7.75	7.36		7.57	
5630	5.25	8.00	5.75	6.33	8.31		5.02	
5635	5.75	8.75	7.50	7.33	7.17		5.75	
5747	4.75	5.50	3.50	4.58	7.00	8.60	6.76	7.45
B7237-14-3	4.00	7.00	2.50	4.50	6.55	6.25	6.15	6.32
B7318-2-1-1-1	1.75	6.50	1.25	3.17	4.60	3.93		
B7318-2-2-2-1	1.75	5.50	4.00	3.75	5.14	4.31	4.78	4.74
B7321-5-1-2-1	3.00	6.25	3.00	4.08	5.50	3.53		
B7323-4-1-1-2	4.50	5.00	4.00	4.50	5.40	5.20	5.38	5.33
B7323-4-1-2-1	3.75	7.00	2.50	4.42	6.09	6.20	5.00	5.76
B7323-5-2-1-1	4.75	4.75	1.75	3.75	5.82	5.07	6.50	5.80
B7324-2-2-1-1	2.75	7.25	3.00	4.33	5.79	4.27	3.70	4.58
B7324-3-2-2-1	5.50	6.25	4.00	5.25	6.31	6.87	6.50	6.56
B7329-1-1-2-1	3.50	6.00	2.00	3.83	5.11	5.53	4.10	4.91
B7329-1-2-2-1	1.50	4.75	2.00	2.75	7.00	5.92		
B7329-2-1-2-2	2.75	5.25	1.25	3.08	6.27	5.67	6.33	6.09
B7329-11-1-2-1	2.25	5.50	3.00	3.58	6.00	6.31		
B7334-9-2-2-1	2.00	2.88	1.75	2.21	6.73		4.05	
B7335-7-1-1-2	2.50	4.25	2.25	3.00	6.27	5.47		
B7335-7-1-2-1	1.75	3.75	2.00	2.50	6.50	4.40		
B7335-7-2-1-1	2.00	4.50	2.00	2.83	5.57	6.77		
B7339-1-1-1-2	3.75	6.00	2.25	4.00	5.54	7.00	3.91	5.48
B7344-5-1-1	1.50	3.75	1.25	2.17	6.20		4.80	
B7354-1-2-1-1	5.00	6.00	2.50	4.50	6.07	4.25	4.35	4.89
B7354-2-1-1-1	3.00	7.00	4.75	4.92	6.21	5.58	3.74	5.18
B7354-2-2-1-2	6.25	7.50	2.75	5.50	5.58	5.18		
B7354-2-2-2-1	2.25	5.25	2.00	3.17	5.69	4.85	4.78	5.10
B7354-6-2-1	1.25	2.50	1.50	1.75	5.55	6.00	2.00	4.52
B7356-4-1-1	1.75	5.75	1.75	3.08	6.00	5.63	5.13	5.59
76-110	2.00	8.25	2.75	4.33	6.33		6.01	
Minuette	4.00	8.50	5.50	6.00	7.69	8.14	6.30	7.38
Ex Rico	5.00	6.50	4.50	5.33	7.00	7.36	6.27	6.88
L192	1.50	2.00	1.75	1.75	4.89	5.00	4.50	4.80
MO 162	1.00	2.00	1.50	1.50	6.07	4.19	5.00	5.09
225846	1.75	6.00	2.00	3.25	4.55		5.29	
824775	4.75	6.25	2.25	4.42	4.27		4.05	
SB 4123	4.00	7.75	4.50	5.42	8.86			
FR 266	3.75	5.00	2.75	3.83	6.13	7.06	3.00	5.40
H9658	4.00	6.50	2.50	4.33	4.25	4.88	4.58	4.57

Table 16. Comparison of white mold field averages and straw test averages, Corvallis, 2000, 1999, & 1998 (cont.).

	White Mold Field Score Average[z]				White Mold Straw Test Average[y]			
Line	2000 Ave.	1999 Ave.	1998 Ave.	Overall Ave.[x]	2000 Ave.	1999 Ave.	1998 Ave	Overall Ave.[w]
H9658-7	2.50	4.00	3.25	3.25	3.60	4.75	3.09	3.81
H9658-9	2.00	4.00	1.00	2.33	3.87	3.71	2.75	3.44
H9658-65	3.00	6.50	2.75	4.08	4.94	5.12	3.67	4.57
H9658-67	4.50	6.25	3.50	4.75	5.14	5.00	3.83	4.66
NY5517	6.00	8.75	4.00	6.25	5.40	5.41	4.10	4.97
NY5521	6.75	8.00	4.50	6.42	4.58	5.63	4.85	5.02
NY5773	2.75	3.88	3.00	3.21	6.00	5.80	5.13	5.64
NY5814-3	2.50	7.75	3.50	4.58	3.60	5.21	3.95	4.26
NY5950	3.00	8.25	3.75	5.00		4.57	5.22	
NY5972	1.25	3.75	2.50	2.50	5.73	5.27	3.50	4.83
NYBS6637	1.25	4.25	2.25	2.58	5.71	6.00	4.30	5.34
NYBS6643	1.75	5.75	2.25	3.25	5.33	6.42	3.11	4.95
NYBS6653	1.75	7.00			4.00	5.29	2.90	4.06
NYBS6670	1.75	4.50	2.25	2.83	5.64	6.08	3.09	4.94
NYBS6671	4.00	4.50	2.00	3.50	5.64	7.33	4.45	5.81
NY1-6020-5	2.75	4.00	3.00	3.25	4.94	3.50	4.45	4.30
NY-15-161-C	4.00	6.75	3.50	4.75	4.86	5.50	3.82	4.73
NY-15-161W	3.00	7.00	3.50	4.50	4.91	5.00	4.17	4.69
NY2-5984-1	2.00	4.00	2.25	2.75	5.45	5.85	4.42	5.24
NY-CT89-61	8.00	9.50			6.67	7.08	3.92	5.89
NY-CT89-63	6.50	10.00			6.60	4.67	4.00	5.09
NY-CT89-124	5.25	7.25	4.25	5.58	4.50	4.00	2.91	3.80
LSD @ 5%				1.64				1.24

[z]White mold scores: 1-10, 1 = low incidence, no symptoms observed, 10 = high incidence, all plants in plot infected. Not all scores available for all years.

[y]White mold straw test scores: 1-10, 1 = small lesion at initial inoculation point, 10 = total collaspe of plant. Not all scores available for all years.

[x]LSD @ 5% = .28 (comparison of white mold field scores over three years).

[w]LSD @ 5% = .32 (comparison of white mold straw test scores over three years).

Figure 1. Standard Bean $/A 2000 - April 29 Planting

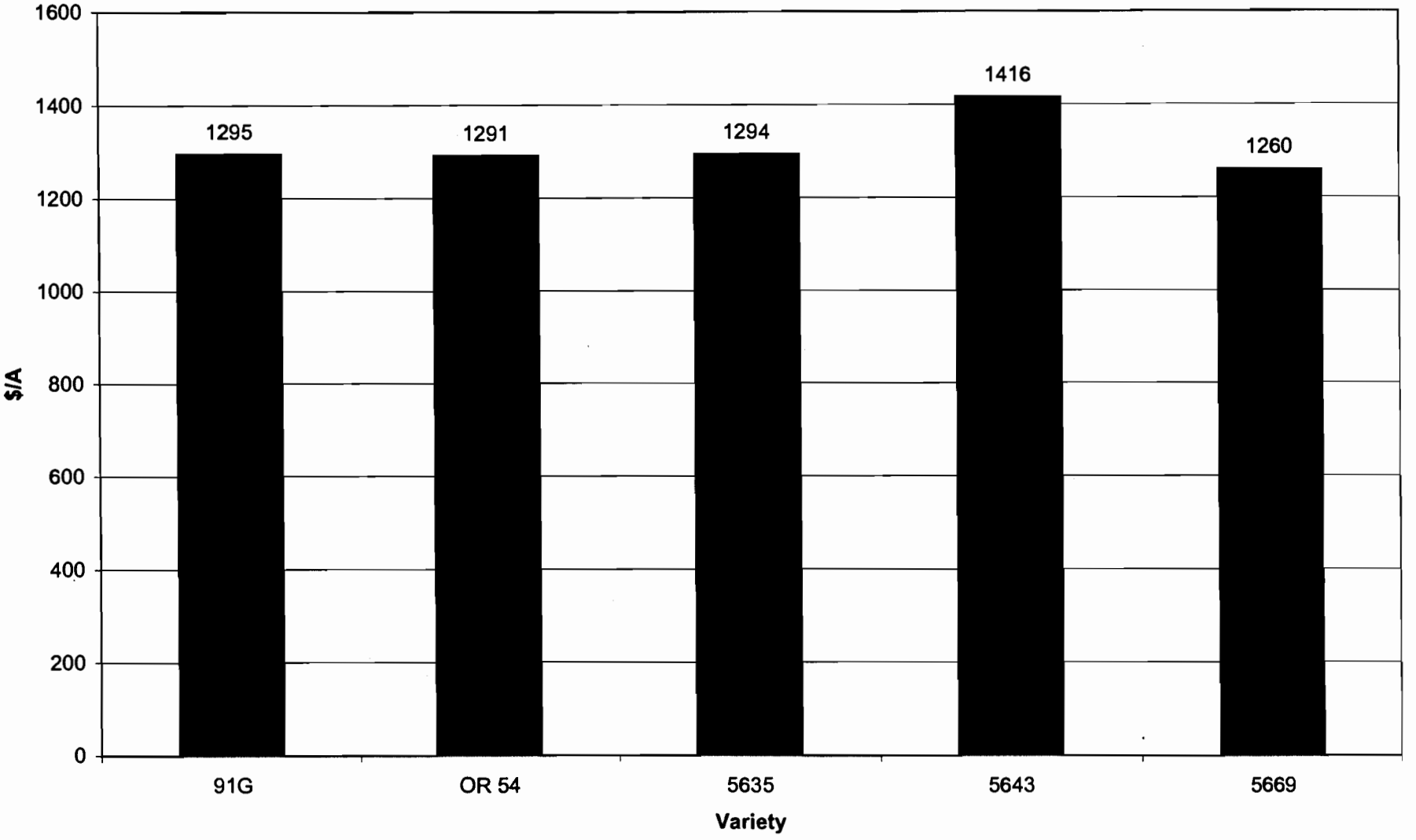


Figure 2. Standard Bean $/A 2000 - May 16 Planting

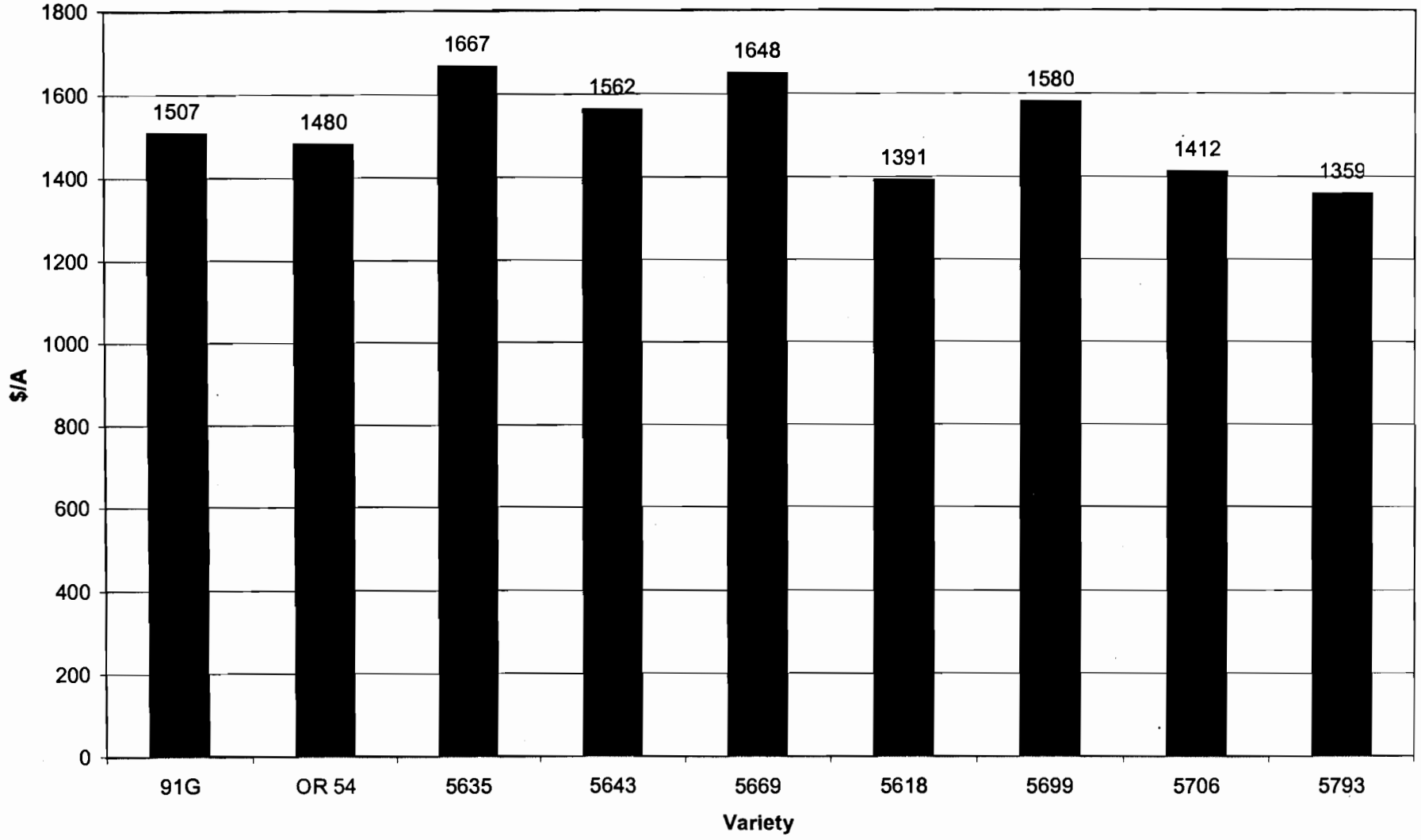


Figure 3. Standard Bean $/A 2000 - May 30 Planting

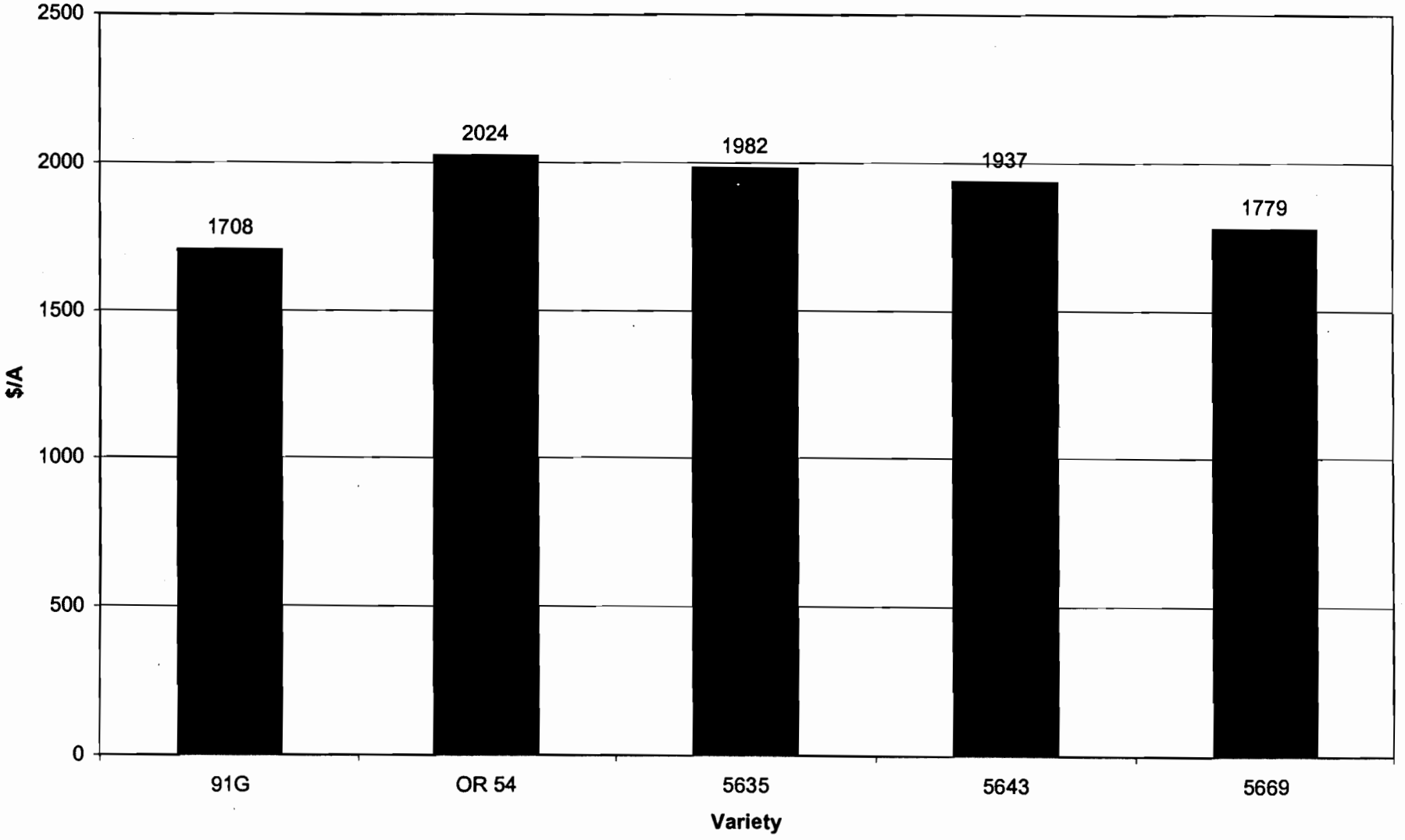


Figure 4. Standard Bean $/A 2000 - June 27 Planting

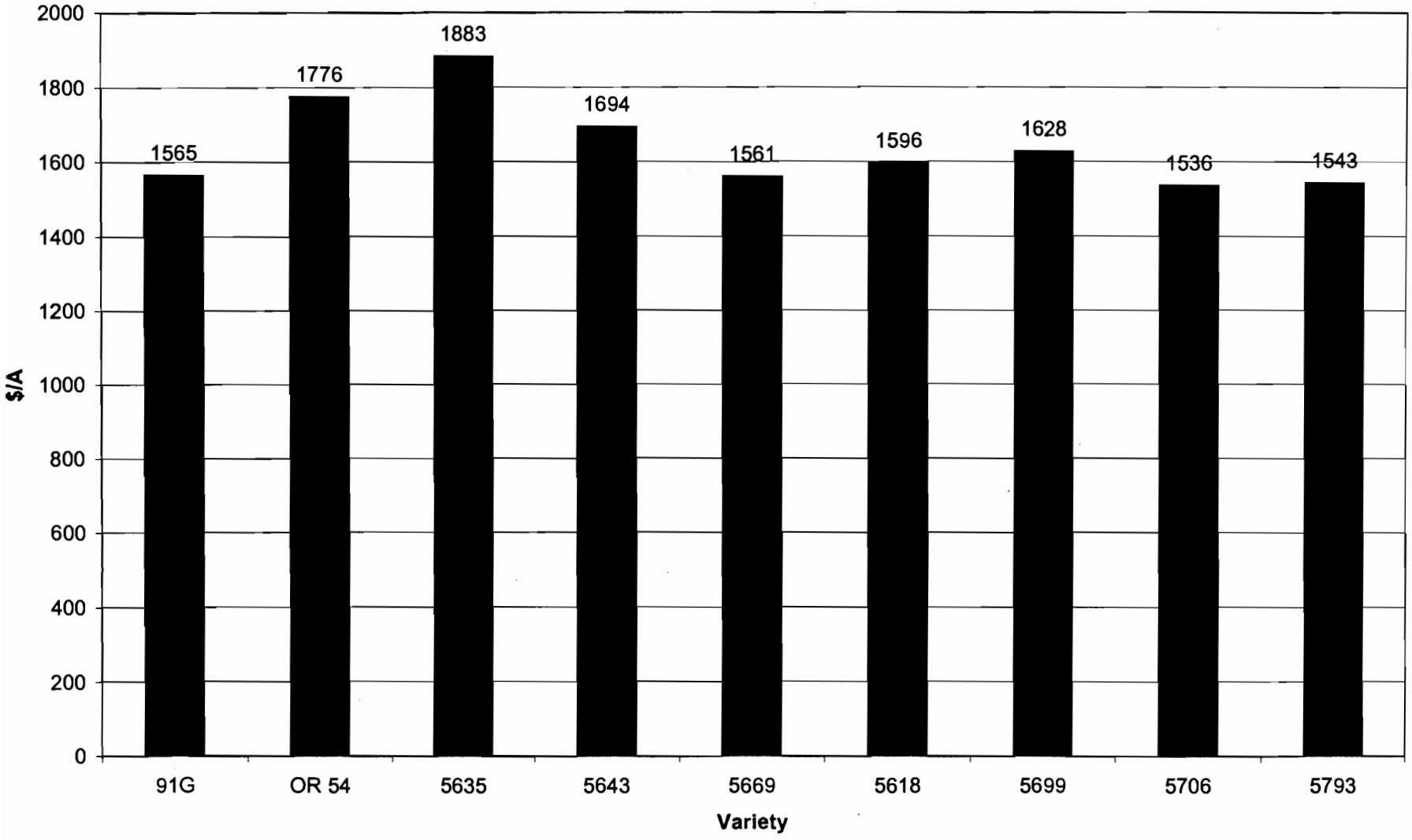


Figure 5. Standard Bean $/A 2000 Season Average - Selected Harvests

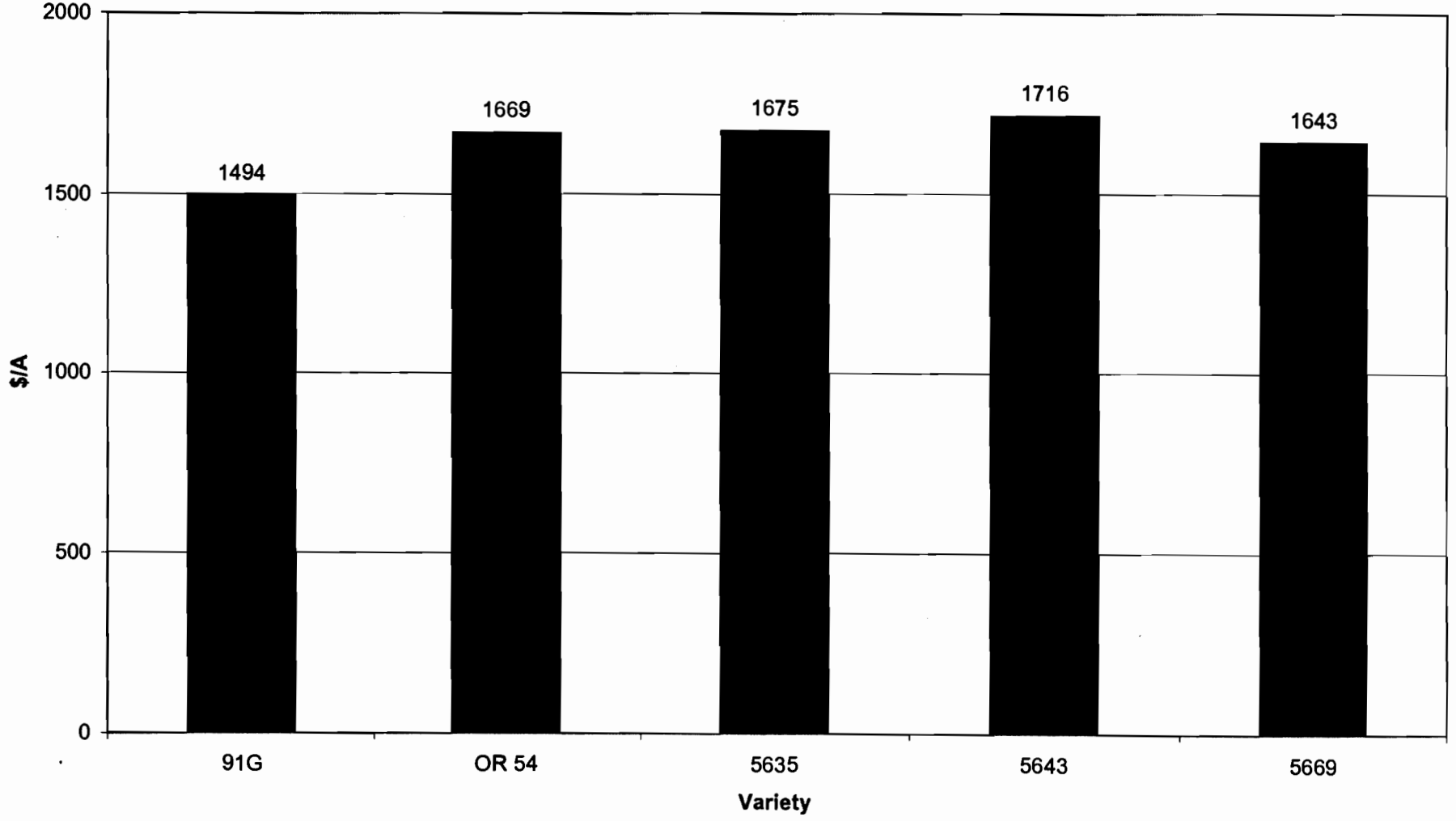


Figure 6. Small Sieve Bean $/A 2000 - April 29 Planting

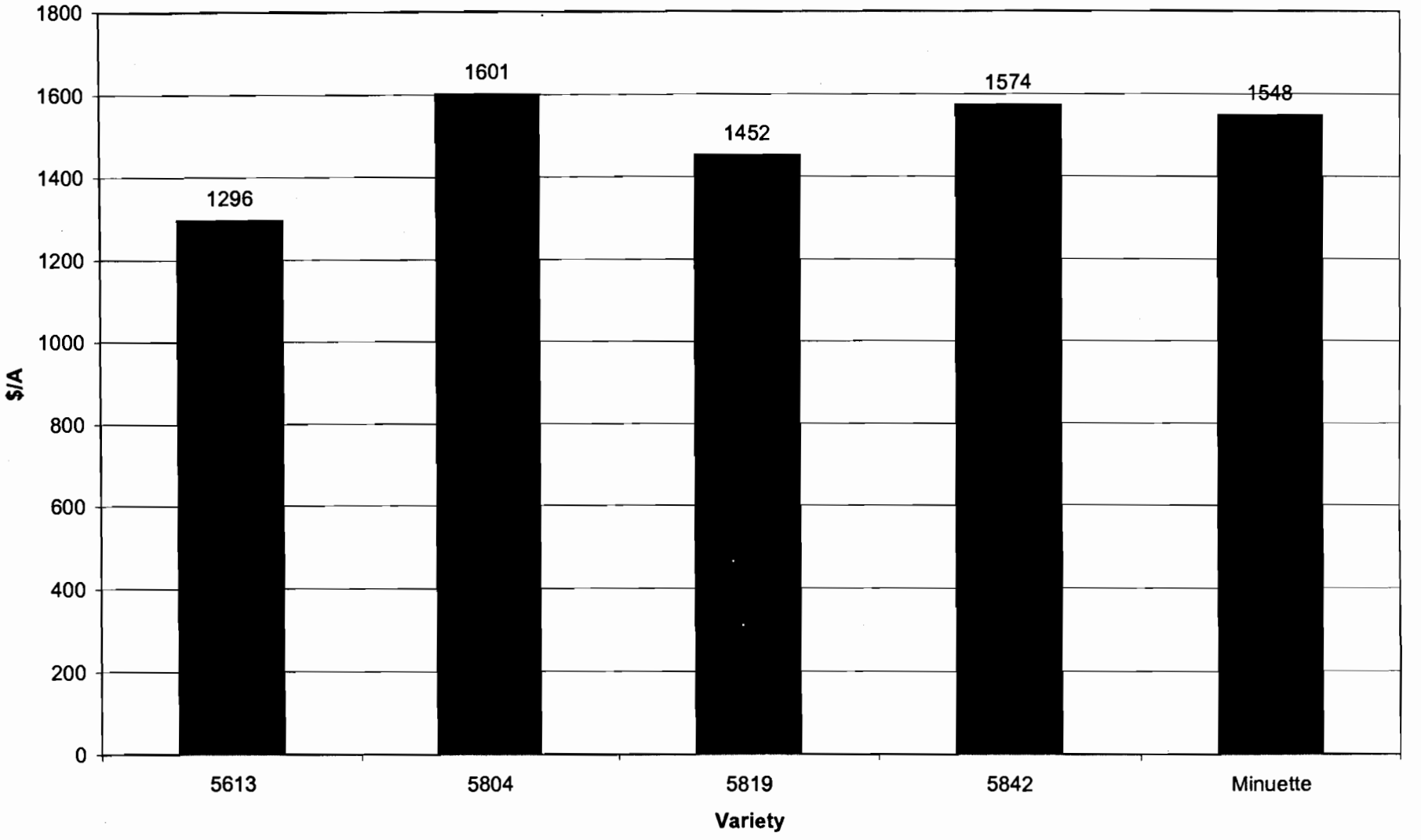


Figure 7. Small Sieve Bean $/A 2000 - May 16 Planting

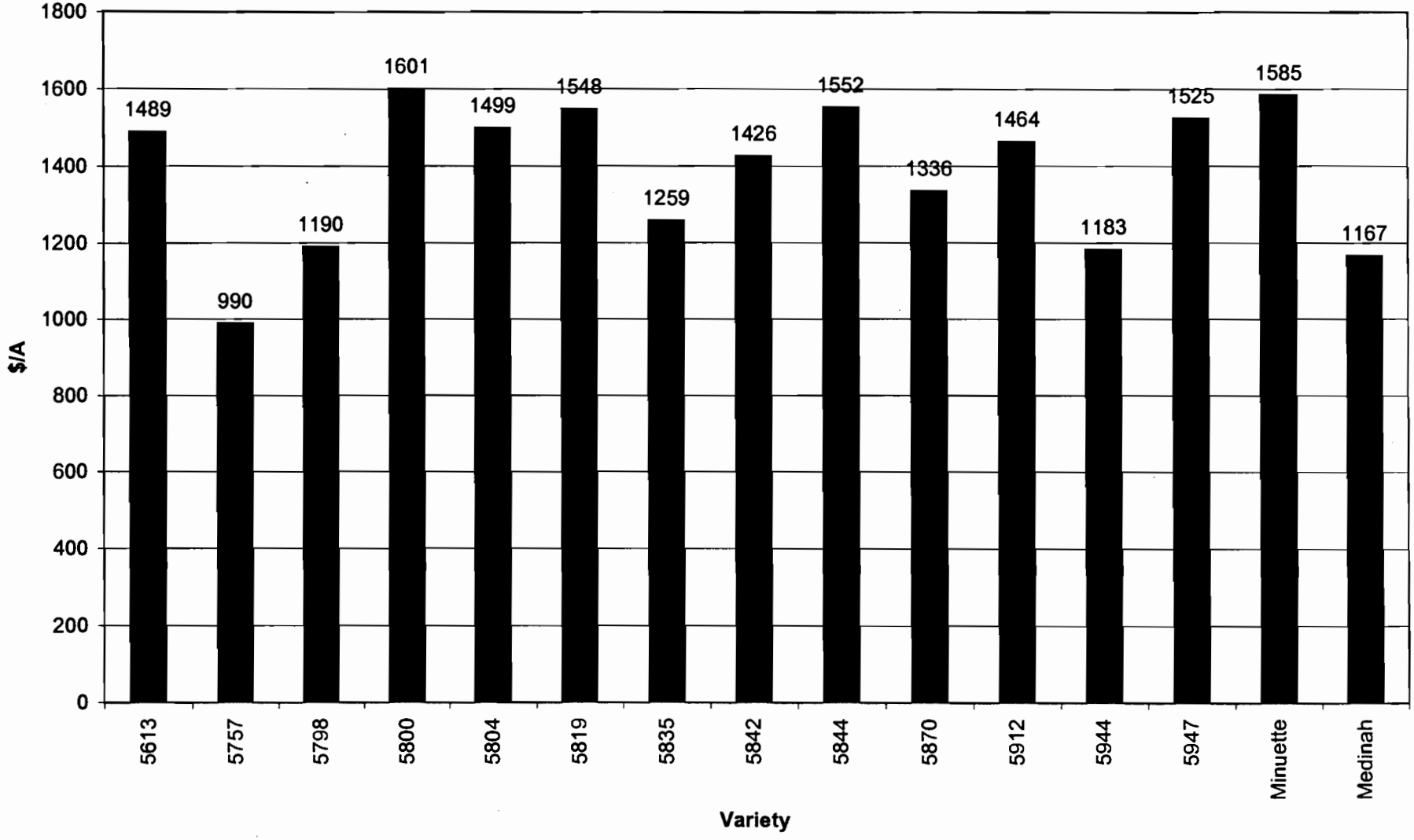


Figure 8. Small Sieve Bean $/A 2000 - May 30 Planting

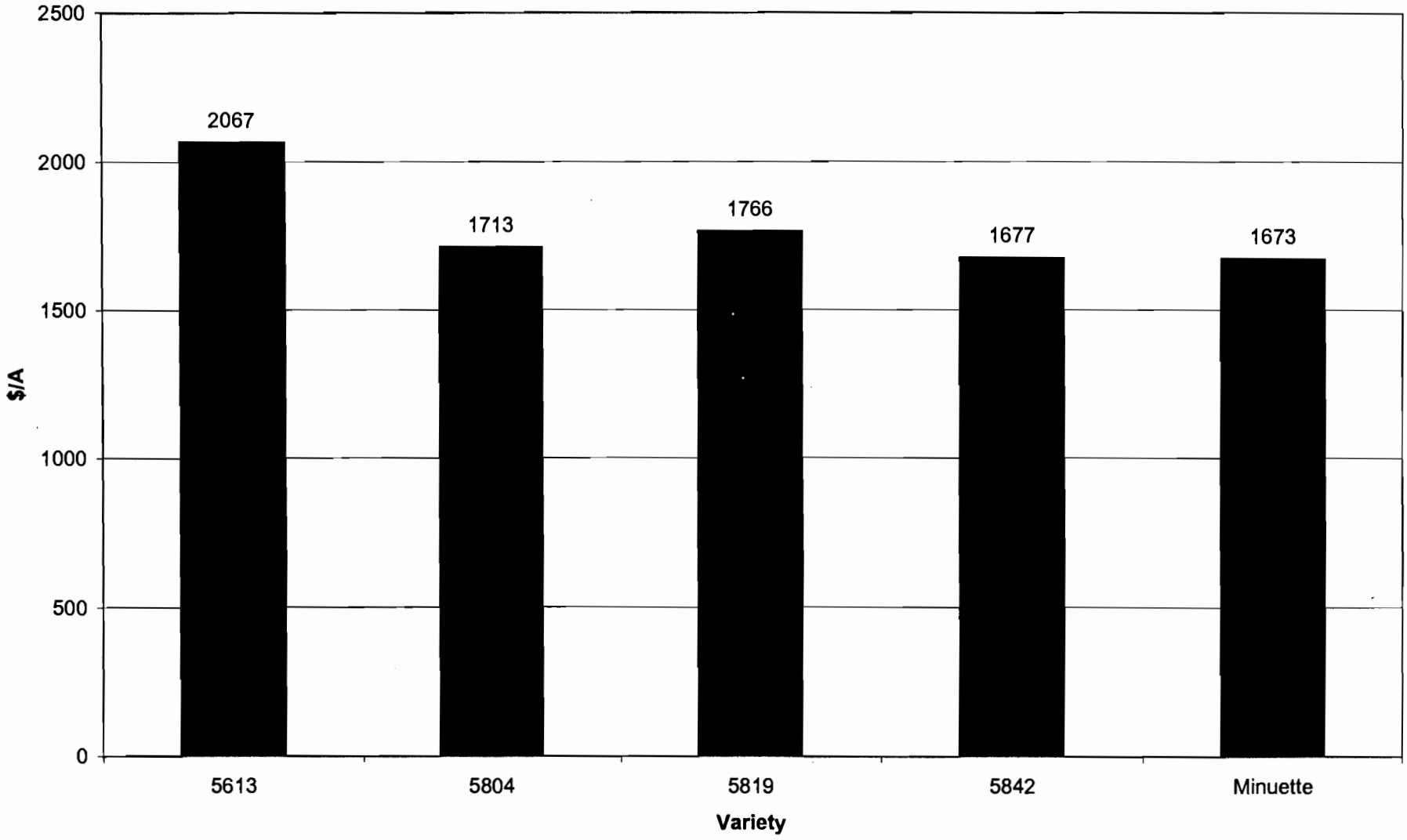


Figure 9. Small Sieve Bean $/A 2000 - June 27 Planting

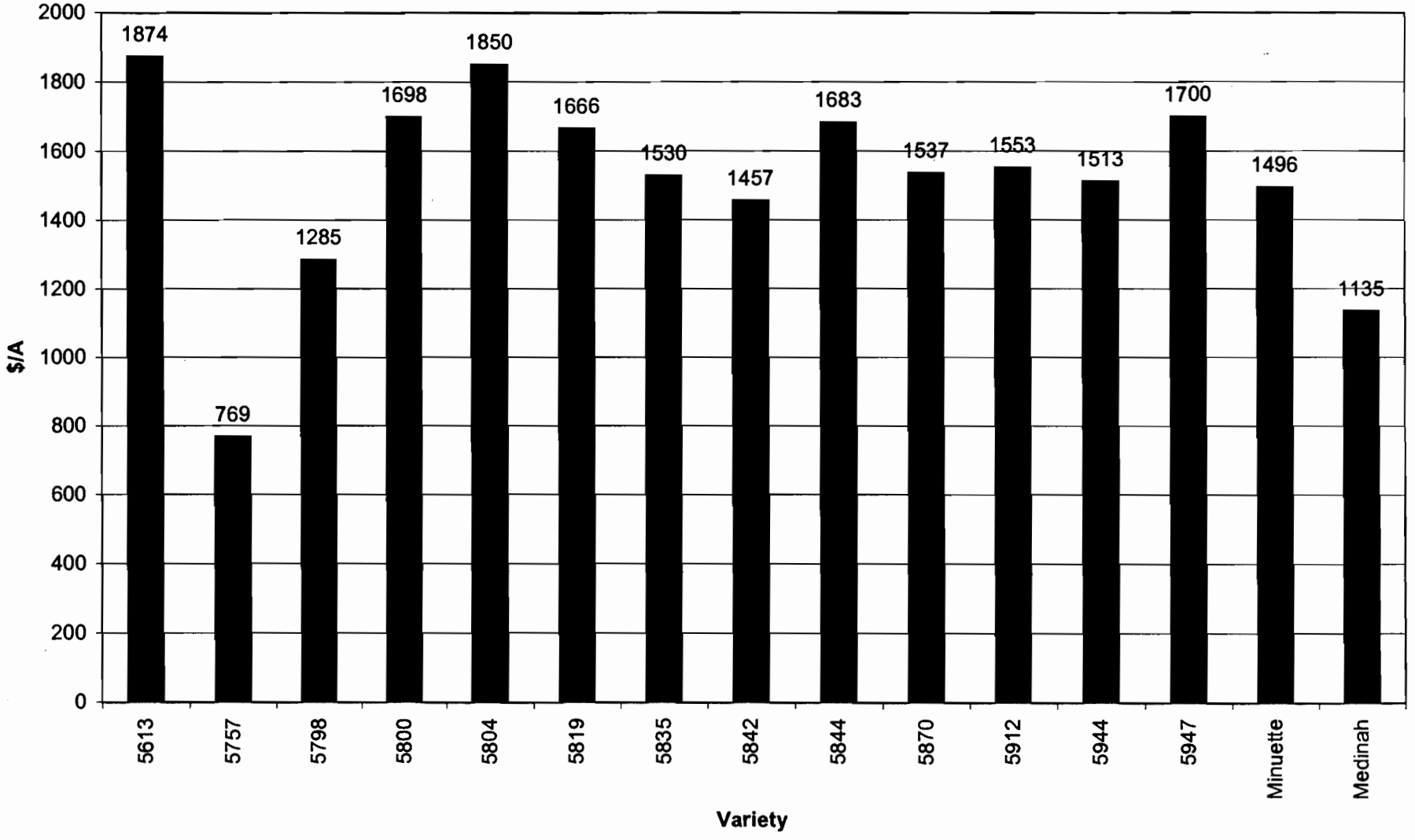


Figure 10. Small Sieve Bean $/A 2000 Season Average - Selected Harvests

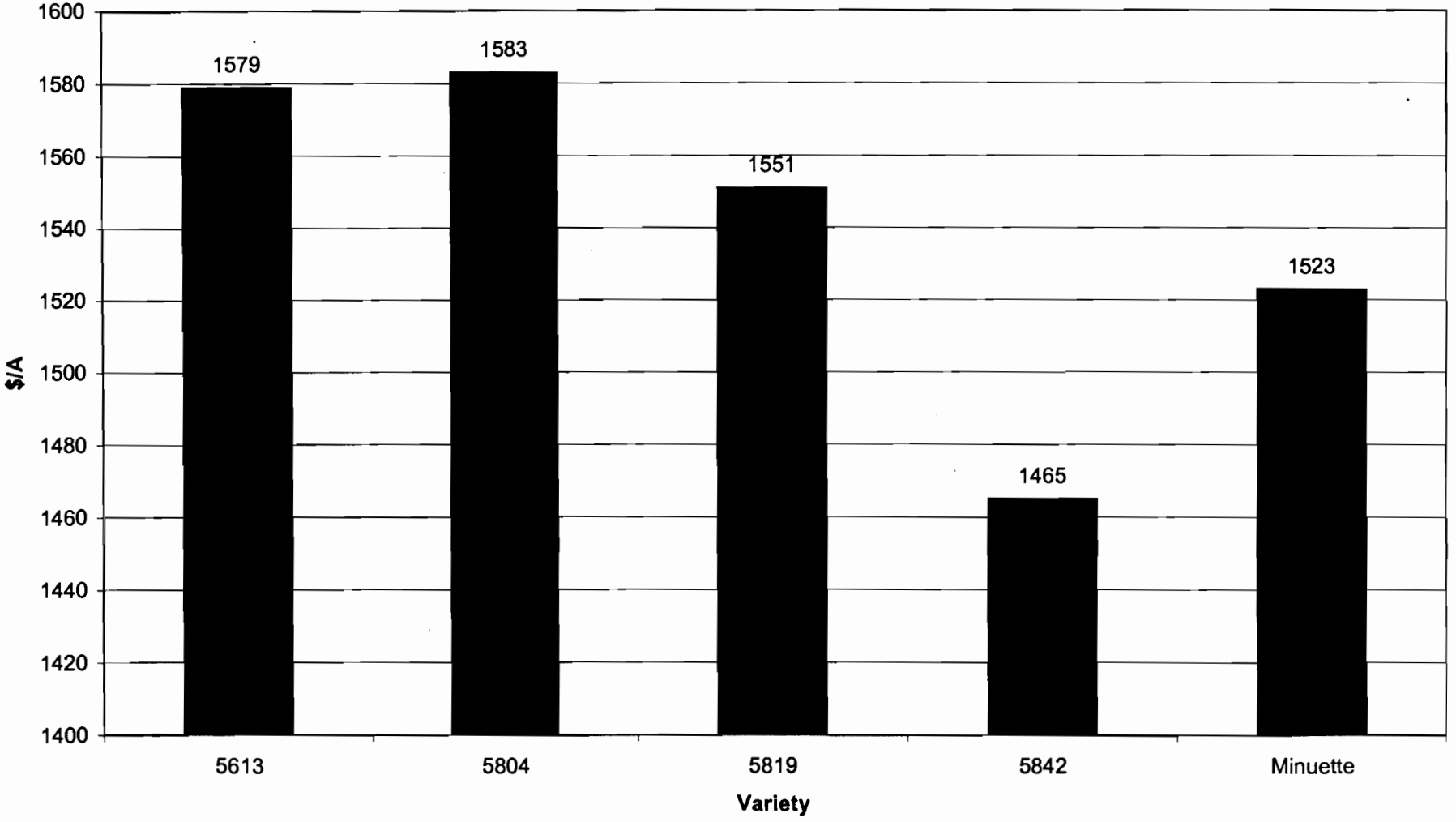


Figure 11. Commercial Bean $/A 2000 - Full Sieve Varieties

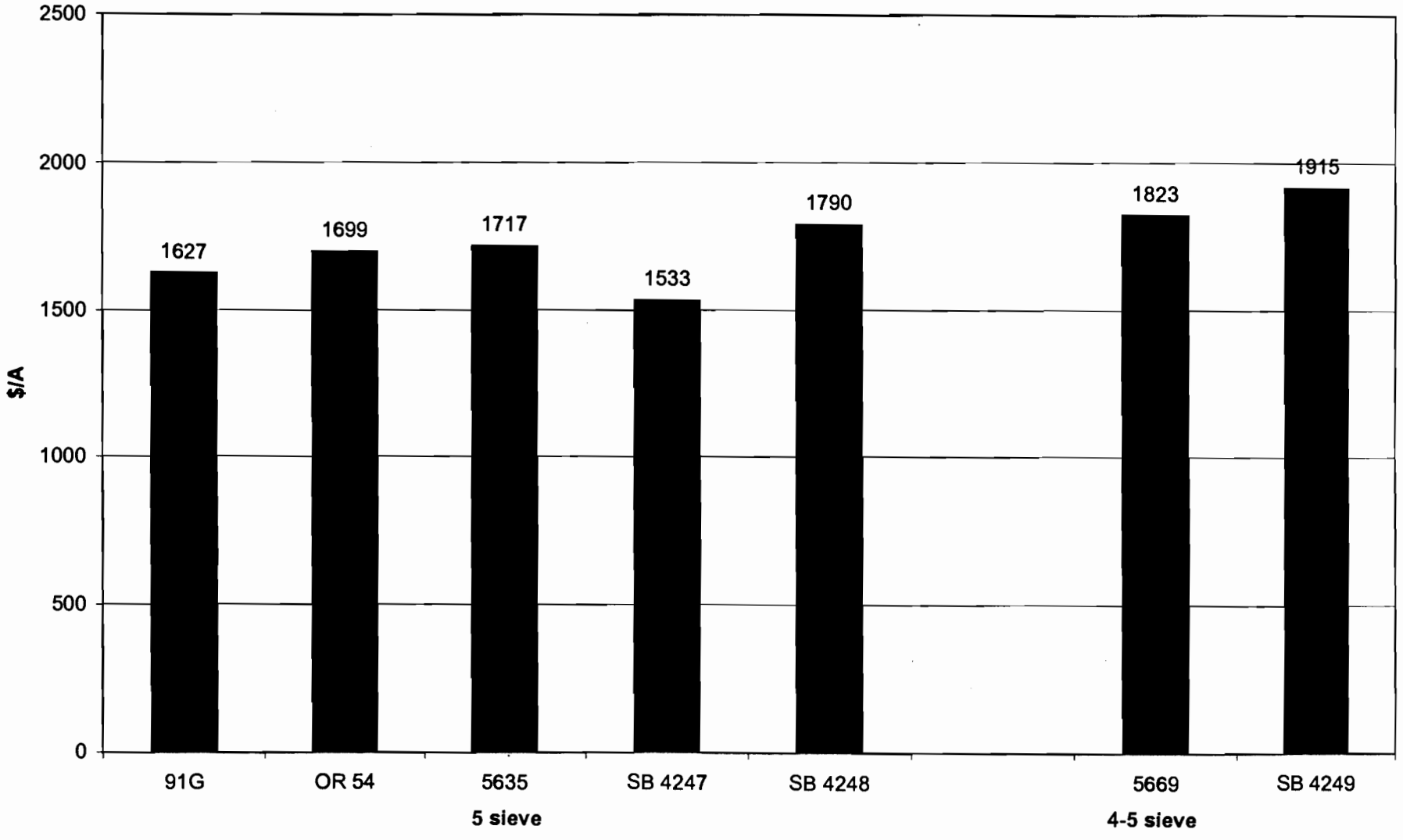


Figure 12. Commercial Bean $/A 2000 - 4 Sieve Varieties

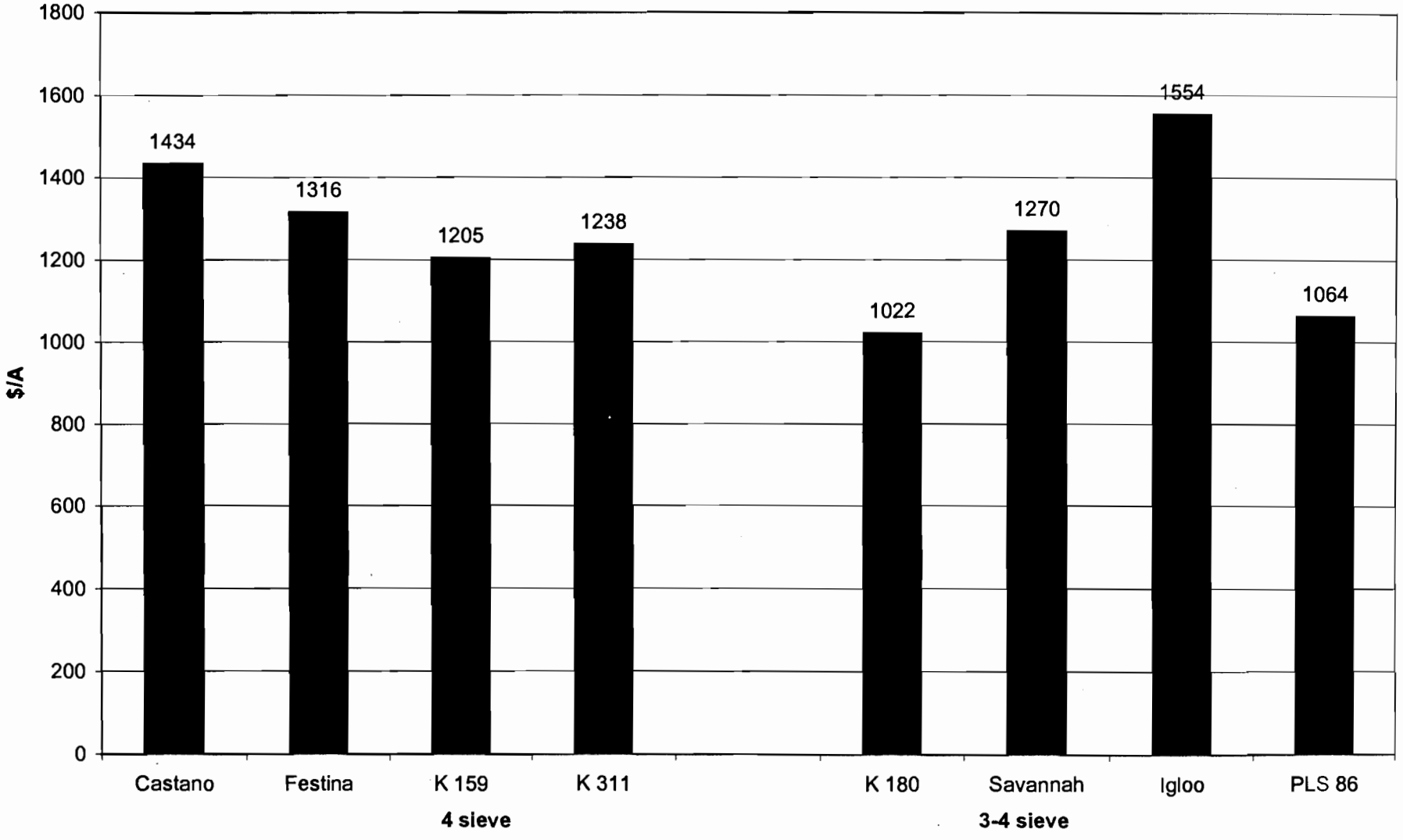


Figure 13. Commercial Bean $/A 2000 - Small Sieve Varieties

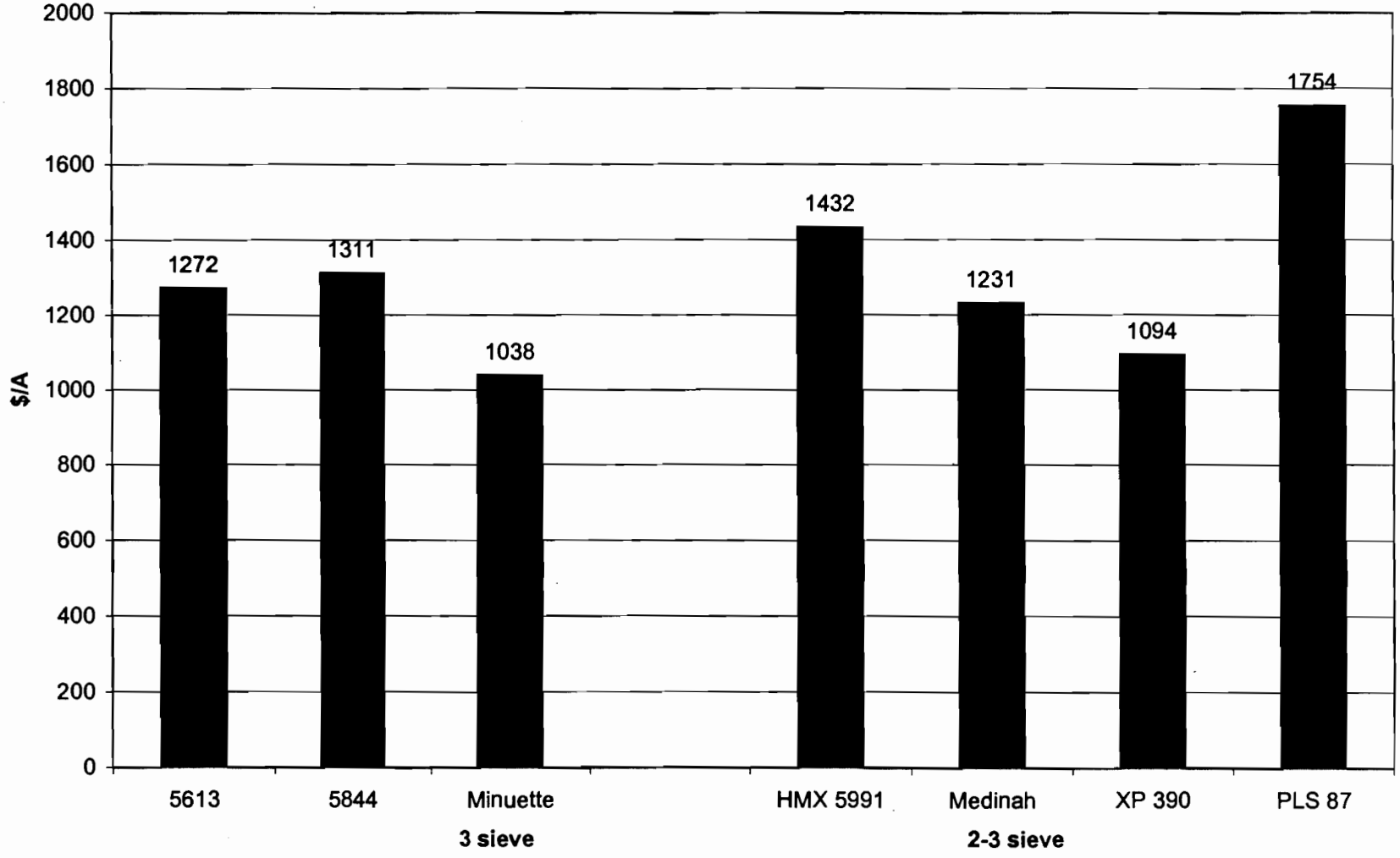


Figure 14. Standard Bean $/A 2000 - Five Year Average

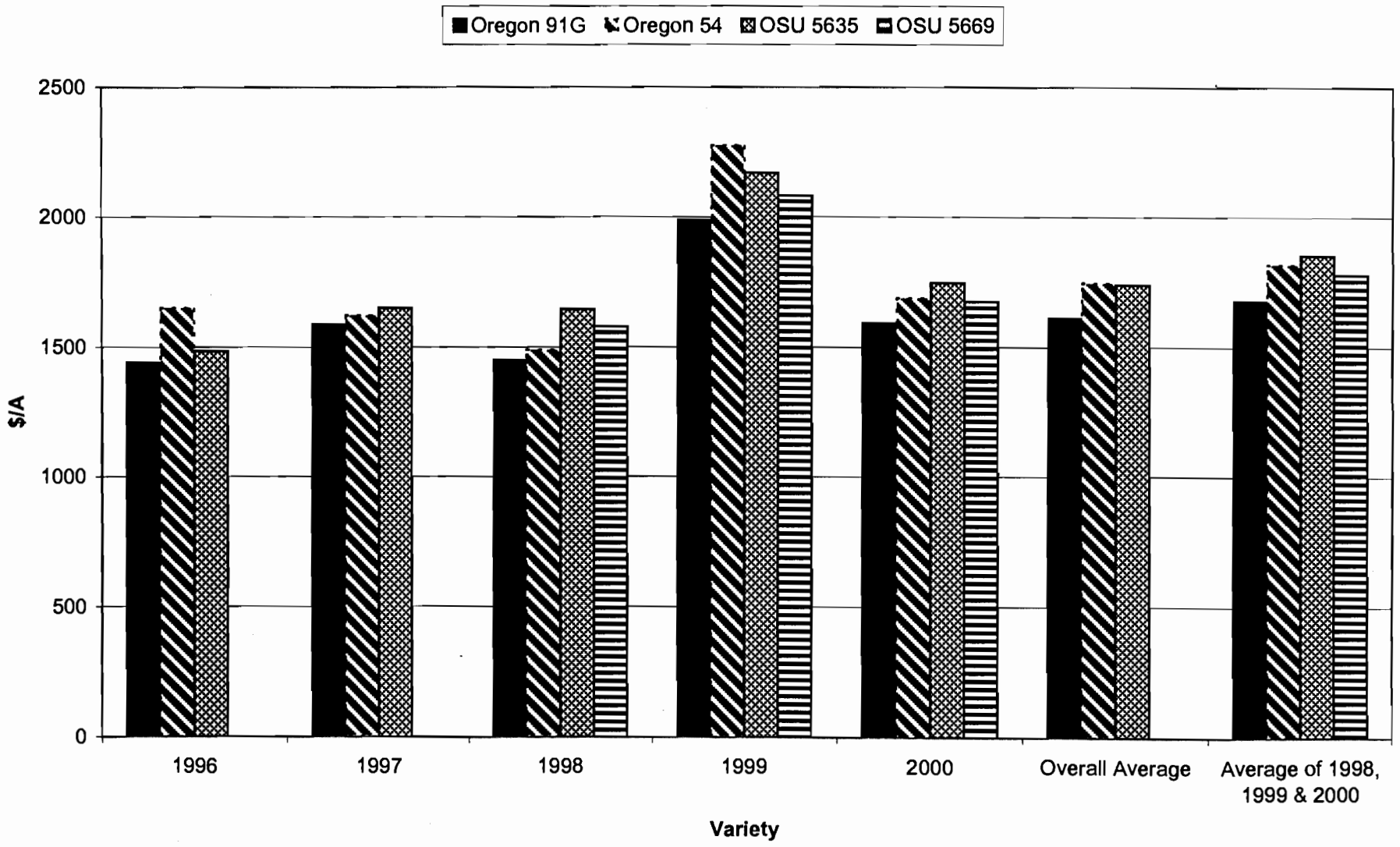


Figure 15. Small Sieve Bean $/A 2000 - Three Year Average

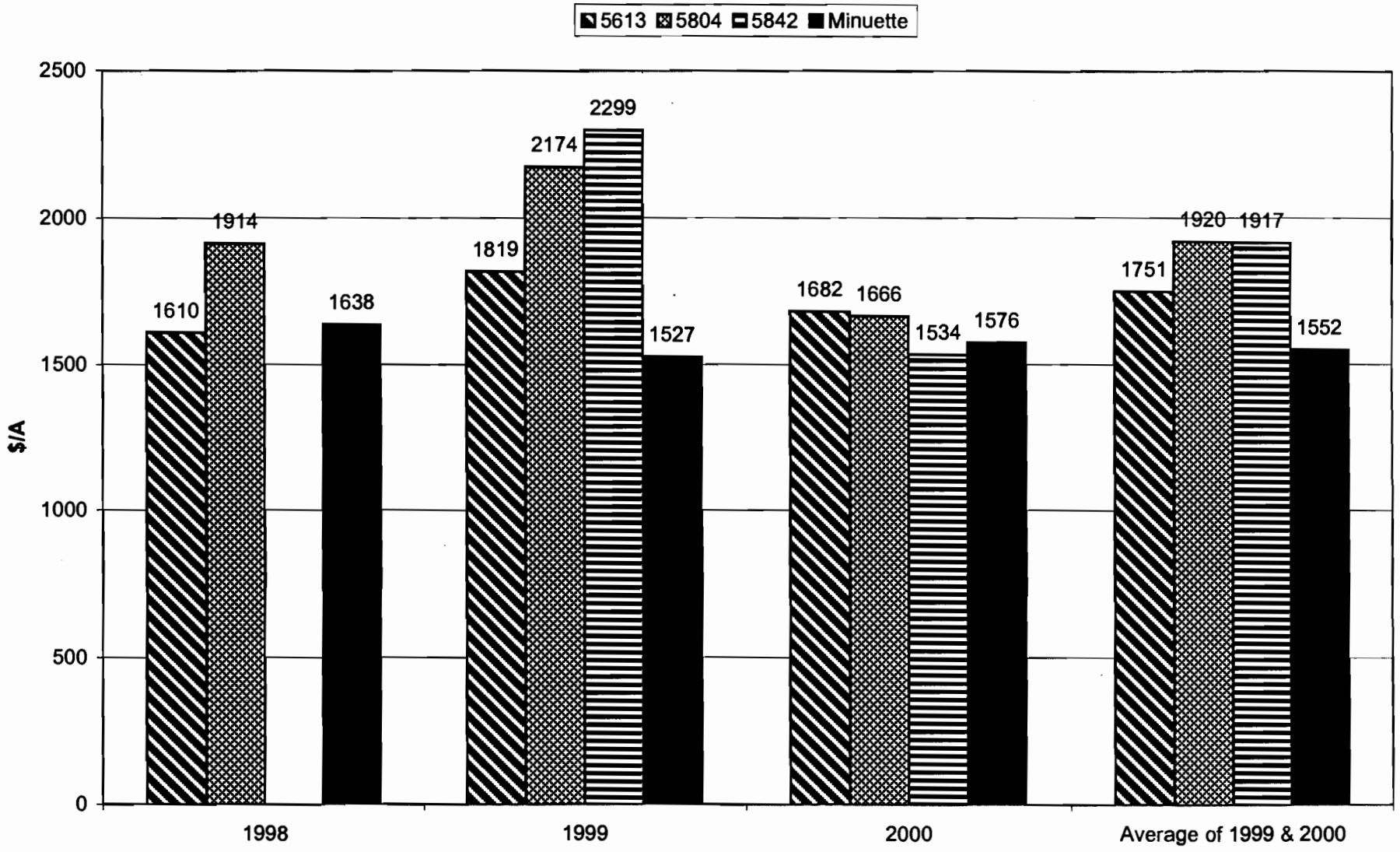
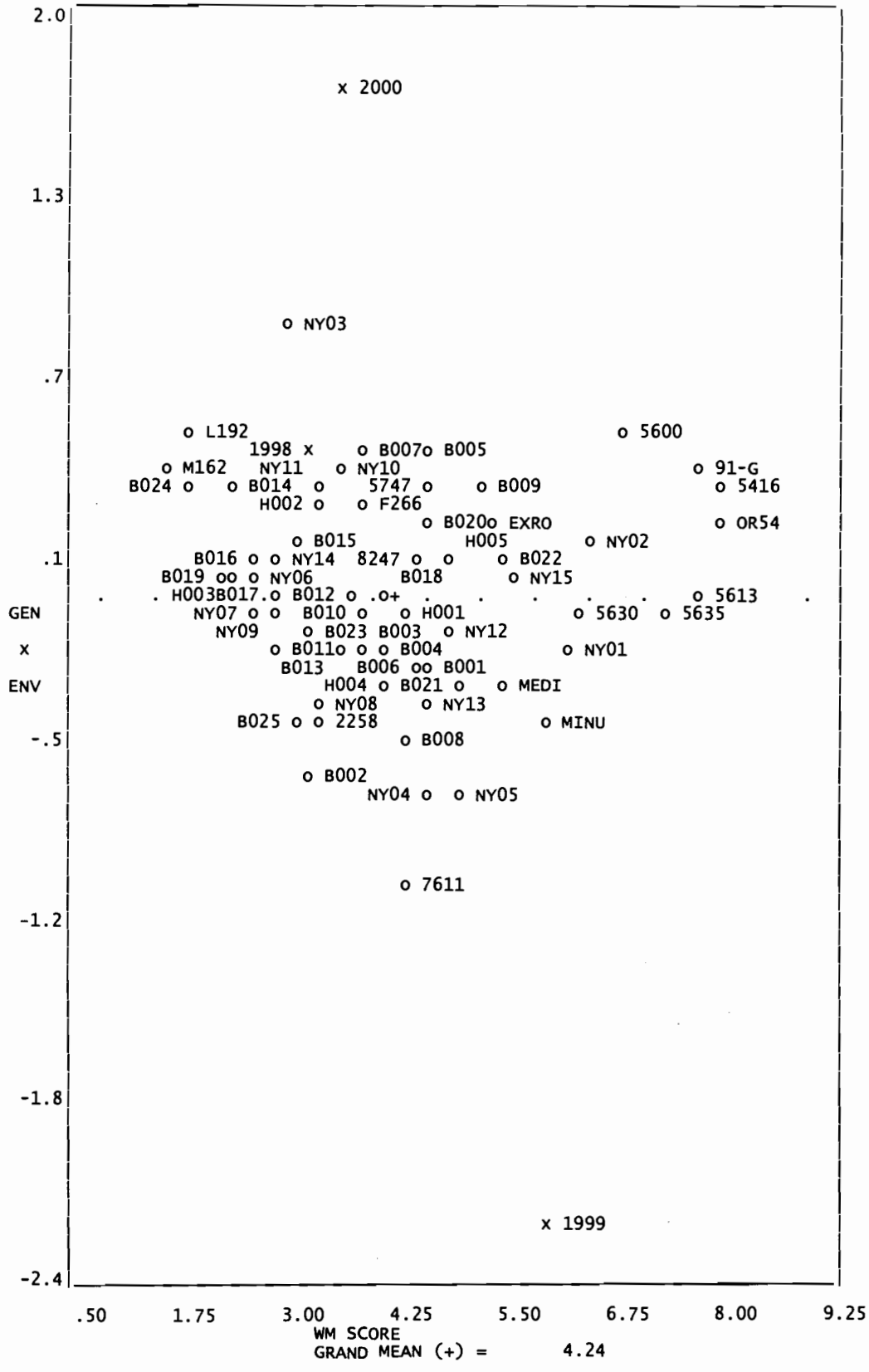


Figure 16. Additive Main Effects Multiplicative Interactions Analysis of White Mold Incidence Over Three Years for 62 Green Bean Lines and Cultivars.



LEGEND:
91-G: 91G; OR54: OR54; 5416: 5416; 5600: 5600; 5613: 5613; 5630: 5630; 5635: 5635; 5747: 5747; B001: B7237-1-4-3; B002: B7318-2-1-1-1; B003: B7318-2-2-2-1; B004: B7321-5-1-2-1; B005: B7323-4-1-1-2; B006: B7323-4-1-2-1; B007: B7323-5-2-1-1; B008: B7324-2-2-1-1; B009: B7324-3-2-2-1; B010: B7329-1-1-2-1; B011: B7329-1-2-2-1; B012: B7329-2-1-2-2; B013: B7329-1-1-1-2-1; B014: B7334-9-2-2-1; B015: B7335-7-1-1-2; B016: B7335-7-1-2-1; B017: B7335-7-2-1-1; B018: B7339-1-1-1-2; B019: B7344-5-1-1; B020: B7354-1-2-1-1; B021: B7354-2-1-1-1; B022: B7354-2-2-1-2; B023: B7354-2-2-2-1; B024: B7354-6-2-1; B025: B7356-4-1-1; 7611: 76-110; MINU: Minuette; EXRO: Ex Rico; L192: L192; M162: MO162; 2258: 225846; 8247: 824775; MEDI: SB 4123; F266: FR 266; H001: H9658; H002: H9658-7; H003: H9658-9; H004: H9658-65; H005: H9658-67;
NY01: NY5517;
NY02: NY5521;
NY03: NY5773;
NY04: NY5814-3;
NY05: NY5950;
NY06: NY5972;
NY07: NYBS6637;
NY08: NYBS6643;
NY09: NYBS6670;
NY10: NYBS6671;
NY11: NY1-6020-5;
NY12: NY1516-1-C;
NY13: NY-1516-1-W;
NY14: NY2-5984-1;
NY15: NYCT8912-4