

**Report to the Oregon Processed Vegetable Commission
1996-1997**

1. **Title:** Green Bean Breeding
2. **Project Leaders:** J. R. Baggett, Horticulture
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- Cooperator:** D. Mok
3. **Project Status:** Terminating June 30, 1997
4. **Project Funding:** \$38,400 breeding
\$9,325 processing

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 panel evaluations.

5. **Objectives:** Breed bush green beans for the western Oregon processing industry with:
 - A. Improved potential for high yields at favorable sieve sizes and dependability
 - B. Improved straightness, texture, and other quality factors
 - C. Develop easy picking and small pod strains of Blue Lake type
 - D. Resistance to white mold and root rot

6. **Report of Progress:**

Bean breeding lines and commercial varieties were tested in replicated yield trials planted May 7, May 29, June 14, June 26, and July 2. The May 7 and June 14 plantings initially included 20 OSU lines and two commercial varieties (Minnette and BBL 76-110), but two OSU lines were discarded before any data were obtained. The July 2 trial included a total of 20 lines. On May 29 and June 26, 10 OSU lines and Minnette were included in double-row plots. In all cases, 5-foot sections were picked on each harvest date in each of four replications. In most cases, three harvests, on alternate days, were made to obtain a range of maturity. Replications were combined for grading.

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

Data obtained from the replicated trials are summarized in Tables 1-9 and Figures 1-9. The summary table below shows the \$ value for seven standard bush Blue Lake varieties and lines.

Variety	Season Average \$/A Based on		
	Trial Averages*	Selected Harvests**	Highest Harvest
Oregon 91G	1440	1431	1541
Oregon 54	1651	1711	1809
OSU 5163	1484	1508	1563
OSU 5416	1627	1630	1729
OSU 5630	1427	1475	1554
OSU 5635	1485	1615	1615
OSU 5651	1644	1717	1785
LSD @ 5%	164	NS	184

*Average of 2-3 harvests from five trials.

**The harvest selected as best for comparison and used for analysis of variance in Tables 1-4.

When overall averages, selected harvests (closest to 55-60% 1-4), or the highest harvest are used, Oregon 54 leads in \$/A, except in selected harvests where OSU 5651 was equal. In all three comparisons, OSU 5651 (Oregon 54 x OSU 5256) is not significantly different from Oregon 54. The goal in this cross is high yield, perhaps smaller pods, and less indeterminate habit than Oregon 54. Further evaluation of 5651, possibly including acreage trials, will be necessary to determine if this line is usefully different from Oregon 54. Yield and pod characteristics are impressive.

OSU 5635 (Oregon 54 x OSU 5163), which exceeded Oregon 91G and usually exceeded OSU 5163, but not significantly, has good-looking pods and should be further tested.

OSU 5630 (Oregon 91G x Oregon 54) was very close in maturity and yield to Oregon 91G. This line, which was initially increased in 1996, has exceptional pod color and is usually noted to be smoother than Oregon 91G. This line, along with 5635 and 5651, should be continued.

Also included in the group of standard lines that were in all trials, OSU 5416 approached Oregon 54 in pod appearance, generally was not as indeterminate, and yielded somewhat less this year. OSU 5163 was revived from the shelf because of its long-term yield record. Its yield and plant characteristics were impressive in 1996, and pod appearance was good if it is treated as a slightly smaller sieve variety than Oregon 91G. Pod color was considered as good as Oregon 91G, but pods were not always as smooth. Should seed be increased for additional commercial trials of this line?

Standard lines tested for the first time, from the same general group of crosses as 5630, 5635, and 5651 were 5620 (Oregon 91G x Oregon 54), 5669 (5256 x Oregon 54), 5681 (5416 x Oregon 54), and 5698 (5256 x 5416). These lines usually had higher \$/A values than Oregon 91G (Table 5) with some variation in pod color and smoothness. Field evaluations indicated 5620 and 5669 should be tested again; decisions on 5681 and 5698 should be made after evaluation of processed pods.

Small sieve beans. Although OSU 5446 has been given up as a processing variety, we again used it for comparison because of its yield and quality attributes. The principal objective in 1996 was the evaluation of small sieve lines OSU 5600 and 5613, using 5446, Minuette, and 76-110 as standards. All but 76-110 were included in all five trials. OSU 5613 had the highest season average \$/A and highest trial \$/A of 2-4 sieve pods in four of the five trials. OSU 5600 was equal or higher than 5446 in three of the five trials and had a higher seasonal average than 5446 (Table 7). Although 5600 and 5613 can return good \$/A for small sieve beans and still retain excellent pod appearance, a panel evaluation of seediness, etc., in all harvest samples will be necessary to determine the true potential for these returns.

Unfortunately, pod color of the higher yielding 5613 is not as good as that of 5600, which has exceptional color. Some trial notes indicated that the color of 5613 is comparable to standard lines such as Oregon 54. Increases of OSU 5600 seed was started in Idaho in 1996 to obtain supplies for field trials. Should 5613 be increased?

Minuette was lower than OSU 5613 in \$/A in all trials and exceeded 5446 in one trial. This variety tends to be inconsistent, suffering badly from weather conditions in some trials, producing many polliwogs. Of the small sieve varieties, 76-110 was the lowest in \$/A in trials 1 and 5. In trial 3 it was never harvested because it seemed to continue producing vegetation with no identifiable time to harvest a crop.

Easy picking beans. Interest in the easy picking lines has reached a low ebb, with most of the OSU material having been shelved. OSU 5520, an early immature-green seed (IG) line has been continued because of its earliness, IG seed, and fleshy pods. OSU 5566 and 5575 were also included in the trials in 1996 and saved for further consideration. Neither have the extreme foliage, habit, and picking ease of EZ Pik or OSU 5558 and 5563, but yield well and may have less end crook. OSU 5575 often yields well and has concentrated bearing. It is not expected that more easy pick crosses will be made.

Development and evaluation of new material. Diverse lines of all pod sizes were evaluated in field plots. Most of the lines on hand have reached the F_6 generation so that the best lines could be massed instead of continued by single plant selection. F_2 populations grown for selection included mostly crosses of OSU lines with Maxima. In 1996, the crossing program stressed crosses between OSU lines of all types x Minuette to initiate an attempt to exploit the compact growth habit and related mold resistance found in Minuette. Additional Maxima crosses (Maxima x 5163 and Maxima x 5778, a very prolific small sieve line) were also made and 5778 was crossed with OSU standard and small sieve lines. F_2 seed was produced for selection plots in 1997.

7. Summary:

Twenty OSU bean lines were evaluated in replicated, hand-picked yield trials over the period May 7 to July 2. Minuette was included as a control in the trials. New standard lines of greatest interest were OSU 5630, which has exceptionally good color and yields about the same as Oregon 91G; OSU 5635, which exceeded Oregon 91G in yield and appears to have smoother and straighter pods; and 5651, with yield and pod quality equal to Oregon 54. Oregon 54 yields expressed as \$/acre were clearly higher than those of Oregon 91G. Small sieve lines of greatest interest were OSU 5600, which has excellent color and pod type with \$/acre value of 2-4 sieve pods exceeding Minuette in three of the five trials, and OSU 5613, which was higher yielding than 5600 and Minuette in all trials but has slightly lighter color. Many new crosses were made with Minuette for the purpose of improving growth habit and mold resistance.

8. Signatures:

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Project Leader:

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Table 1. Yields of standard green bean varieties, May 7 planting, Corvallis, 1996.²

Line	Av. Stand	Harvest 1				Harvest 2				Harvest 3				Av. Adj. T/A
		Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	
91G	135	72	66	5.5	6.4	73	54	5.9	6.2*	76	51	6.6	6.6	6.4
Oregon 54	140	73	67	5.9	7.0	76	61	6.7	7.4	78	60	8.0	8.8*	7.7
5163	140	72	77	5.5	7.0	73	64	5.6	6.4	76	58	6.3	6.8*	6.7
5416	138	73	62	6.0	6.7	76	52	6.7	6.8*	78	48	7.3	7.2	6.9
5520	138	73	40	5.2	4.7*	76	31	6.3	5.1					4.9
5566	140	73	55	5.3	5.5*	76	49	6.5	6.4					6.0
5575	136	70	80	3.7	4.8	72	40	5.7	5.1*					5.0
5620	140	76	59	6.5	7.1*	78	47	8.4	8.2					7.7
5630	127	72	72	5.6	6.9	73	67	5.7	6.6	76	61	7.1	7.9*	7.1
5635	134	73	70	5.0	6.0	76	62	5.9	6.6	77	62	6.5	7.3*	6.6
5651	140	76	73	6.9	7.3	78	69	7.0	7.2*	80	66	8.1	8.2	7.6
5669	140	73	64	6.1	6.9	76	58	6.6	7.2*	78	48	7.8	7.7	7.3
5681	136	73	69	5.5	6.6	76	53	8.2	8.5*					7.6
5698	140	73	58	6.1	6.6*	76	38	8.1	7.1					6.9

²Mean of 4 replications; subplots of 5' were harvested from 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. T/A = tons per acre adjusted to 50% 1-4 sieve (except 5651, which was adjusted to 65% 1-4 sieve). Analysis of variance calculated using the harvest marked with *. LSD for comparing * means (both unadjusted and adjusted) was 1.1 T/A at 5% significance.

Table 2. Yields of standard green bean varieties, June 14 planting, Corvallis, 1996.²

Line	Av. Stand	Harvest 1				Harvest 2				Harvest 3				Av. Adj. T/A
		Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	
91G	150	63	69	9.6	11.4	66	58	10.9	11.8*	68	49	12.4	12.3	11.8
Oregon 54	150	63	76	8.1	10.2	66	70	11.4	13.7	68	60	11.7	12.8*	12.3
5163	150	61	65	8.3	9.5	62	60	8.2	9.0*	63	64	8.7	10.0	9.5
5416	150	61	69	8.9	10.6	62	66	10.8	12.6*	63	53	11.9	12.3	11.8
5520	150	61	62	5.9	6.7*									6.7
5566	150	63	65	8.8	10.1*									10.1
5575	149	61	53	6.6	6.8*									6.8
5620	150	67	55	11.5	12.1*									12.1
5630	150	62	58	8.2	8.8*	63	52	10.3	10.5	67	47	10.8	10.5	9.9
5635	150	63	77	7.9	10.0	66	64	10.2	11.6	68	58	11.0	11.8*	11.1
5651	150	63	87	6.6	7.7	66	70	9.2	9.6	68	66	11.3	11.4*	9.6
5669	150	62	62	9.4	10.5	63	59	10.2	11.1*					10.8
5698	150	62	63	7.4	8.4*									8.4

²Mean of 4 replications; subplots of 5' were harvested from 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. T/A = tons per acre adjusted to 50% 1-4 sieve (except 5651, which was adjusted to 65% 1-4 sieve). Analysis of variance calculated using the harvest marked with *. LSD for comparing * means (unadjusted) was 2.4 T/A at 5% significance; for comparing adjusted * means LSD was 2.6 T/A at 5% significance.

Table 3. Yields of standard green bean varieties, July 2 planting, Corvallis, 1996.²

Line	Av. Stand	Harvest 1				Harvest 2				Av. Adj. T/A
		Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	
91G	150	66	72	9.5	11.6	69	52	10.1	10.3*	11.0
Oregon 54	149	69	68	10.4	12.3	71	59	11.5	12.5*	12.4
5163	150	66	61	10.8	12.0*	69	50	11.3	11.3	11.7
5416	150	69	66	11.8	13.7	71	54	11.6	12.1*	12.9
5520	149	66	49	8.3	8.2*					8.2
5566	150	66	74	10.2	12.7	69	57	11.4	12.2*	12.5
5575	150	66	47	10.9	10.6*					10.6
5630	150	66	71	8.6	10.4	69	56	10.4	11.0*	10.7
5635	148	69	61	10.1	11.2*	71	54	10.1	10.5	10.9
5651	150	69	67	10.9	11.1*	71	58	11.1	10.5	10.8
5669	149	69	61	11.7	13.0*	71	53	12.3	12.7	12.9
5681	150	66	68	8.7	10.3	69	49	10.4	10.3*	10.3
5698	150	69	54	9.6	10.0*	71	46	11.3	10.8	10.4

²Mean of 4 replications; subplots of 5' were harvested from 20' plots on each harvest date; rows 36" apart; days = days from planting; % = percent 1-4 sieve grades; adj. T/A = tons per acre adjusted to 50% 1-4 sieve (except 5651, which was adjusted to 65% 1-4 sieve). Analysis of variance calculated using the harvest marked with *. Unadjusted means were not significantly different at 5% significance; LSD for comparing adjusted * means was 1.8 T/A at 5% significance.

Table 4. Yields of selected OSU green bean lines on two planting dates, Corvallis, 1996.*

Line	Av. Stand	Harvest 1				Harvest 2				Harvest 3				Av. Adj. T/A	LSD ^y T/A	LSD ^y Adj. T/A
		Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A	Days	% 1-4	T/A	Adj. T/A			
91G	150	66	82	6.1	8.0	68	59	7.1	7.7*	70	38	9.1	8.0	7.9	1.9	2.0
Oregon 54	150	66	85	7.6	10.2	68	63	7.8	8.8*	70	48	9.9	9.7	9.6		
5163	150	66	87	7.0	9.6	68	67	9.0	10.5*	70	50	9.3	9.3	9.8		
5416	150	66	84	6.2	8.4	68	61	8.2	9.1*	70	41	10.0	9.1	8.9		
5630	150	66	76	6.4	8.0	68	53	8.1	8.7*	70	31	7.1	5.7	7.4		
5635	150	66	86	6.7	9.1	68	67	7.9	9.2	70	52	10.0	10.2*	9.5		
5651	150	66	96	6.9	8.6	68	82	8.3	9.4	70	67	8.7	8.9*	9.0		
91G	149	65	93	5.8	8.3	69	46	9.0	8.7*	71	38	9.8	8.6	8.5	1.5	1.6
Oregon 54	148	69	56	10.1	10.7*	71	48	9.3	9.2					10.0		
5163	150	65	85	6.9	9.2	69	53	8.8	9.1*	71	46	9.9	9.5	9.3		
5416	149	69	58	9.8	10.5*	71	44	12.0	11.2					10.9		
5630	147	63	90	7.2	10.0	69	54	9.1	9.5*	71	47	9.8	9.5	9.7		
5635	150	69	55	9.2	9.6*	71	49	8.4	8.4					9.0		
5651	148	69	62	8.8	8.6*	71	57	9.5	8.9					8.8		

*Means of 4 replicates; 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. T/A = tons/acre adjusted to 50% 1-4 (except 5651, which was adjusted to 65% 1-4).

^yAnalysis of variance calculated using the harvest marked *; LSD was calculated at 0.05 significance to compare values marked *.

Table 5. Dollar return/acre for standard OSU lines, 1996.^z

Trial	Line	Harvest 1			Harvest 2			Harvest 3			Avg. \$/A ^y	Selected \$/A ^x
		Days	%	\$	Days	%	\$	Days	%	\$		
1 May 7	91G	72	66	938	73	54	957	76	51	1024	973	957
	Ore. 54	73	67	982	76	61	1174	78	60	1382	1179	1174
	5163	72	77	1065	73	64	973	76	58	1079	1039	1079
	5416	73	62	1007	76	52	1105	78	48	1223	1112	1105
	5520	73	40	763	76	31	837				800	763
	5566	73	55	855	76	49	1061				958	855
	5575	70	80	689	72	40	840				765	840
	5620	76	59	1153	78	47	1319				1236	1153
	5630	72	72	1051	73	67	1020	76	61	1271	1114	1271
	5635	73	70	901	76	62	993	77	62	1139	1011	1139
	5651	76	73	1300	78	69	1309	80	66	1505	1371	1309
	5669	73	64	1069	76	58	1173	78	48	1267	1170	1173
	5681	73	69	977	76	53	1247				1112	1247
	5698	73	58	1054	76	38	1216				1135	1054
2 May 29	91G	66	82	1191	68	59	1244	70	38	1423	1286	1244
	Ore. 54	66	85	1546	68	63	1418	70	48	1652	1539	1418
	5163	66	87	1458	68	67	1645	70	50	1540	1548	1645
	5416	66	84	1264	68	61	1464	70	41	1516	1415	1464
	5630	66	76	1242	68	53	1387	70	31	999	1209	1387
	5635	66	86	1355	68	67	1436	70	52	1666	1486	1666
	5651	66	96	1488	68	82	1699	70	67	1665	1617	1665
3 June 14	91G	63	69	1678	66	58	1861	68	49	2036	1859	1861
	Ore. 54	63	76	1417	66	70	2075	68	60	2029	1841	2029
	5163	61	65	1430	62	60	1390	63	64	1548	1456	1390
	5416	63	69	1558	66	66	1937	68	53	2001	1832	1937
	5520	61	62	1011							1011	1011
	5566	63	65	1506							1506	1506
	5575	61	53	1026							1026	1026
	5620	67	55	1933							1933	1933
	5630	62	58	1370	63	52	1646	67	47	1737	1584	1370
	5635	63	77	1402	66	64	1773	68	58	1920	1698	1920
	5651	63	87	1257	66	70	1708	68	66	2078	1682	2078
	5669	62	62	1548	63	59	1724				1636	1724
	5698	62	63	1252							1252	1252
4 June 26	91G	65	93	1212	69	46	1426	71	38	1441	1360	1426
	Ore. 54	69	56	1923	71	48	1544				1733	1923
	5163	65	85	1377	69	53	1486	71	46	1602	1488	1486
	5416	69	58	1685	71	44	1734				1709	1685
	5630	63	90	1476	69	54	1553	71	47	1580	1536	1553
	5635	69	55	1558	71	49	1374				1466	1558
	5651	69	62	1553	71	57	1666				1610	1553

Table 5. Dollar return/acre for standard OSU lines, 1996 (cont.).^z

Trial	Line	Harvest 1			Harvest 2			Harvest 3			Avg. \$/A ^y	Selected \$/A ^x
		Days	%	\$	Days	%	\$	Days	%	\$		
5 July 2	91G	66	72	1780	69	52	1667				1724	1667
	Ore. 54	69	68	1913	71	59	2012				1962	2012
	5163	66	61	1939	69	50	1840				1890	1939
	5416	69	66	2171	71	54	1958				2065	1958
	5520	66	49	1364							1364	1364
	5566	66	74	1964	69	57	2006				1985	2006
	5575	66	47	1756							1756	1756
	5630	66	71	1584	69	56	1796				1690	1796
	5635	69	61	1791	71	54	1736				1763	1791
	5651	69	67	1978	71	58	1906				1942	1978
	5669	69	61	2048	71	53	2155				2101	2048
	5681	66	68	1616	69	49	1724				1670	1724
	5698	69	54	1633	71	46	1845				1739	1633

^zBased on a value of \$242 for 2-4 sieve pods; \$108 for 5 and 6 sieve pods. Yield of 2-sieve pods was obtained by taking three-fourths of the combined graded 1-2 sieve pods.

^yAverage \$/acre is a rough estimate because of non-uniform number of trials and maturities included.

^xSelected best values for comparison. Usually the same value used for analysis of variance in Tables 1, 2, 3, and 4.

Table 6. Performance of small sieve green bean varieties, Corvallis, 1996.

Trial	Variety	Days	Percent Sieve Size ^z				Tons/Acre Sieve Size					\$/Acre ^w
			2 ^y	3	4	5	Graded					
							2	3	4	5	Total ^x	
1 May 7	5446	69	41	52	7	0	1.01	1.27	0.18	0	2.46	594
		71	14	62	21	3	0.60	2.72	0.91	0.15	4.37	1038
		73	8	41	44	7	0.41	2.21	2.39	0.40	5.41	1256
	5600	73	23	62	14	2	0.52	1.41	0.33	0.04	2.29	550
		76	21	49	27	2	0.65	1.49	0.83	0.07	3.05	727
		78	26	46	25	3	0.65	1.16	0.62	0.07	2.50	596
	5613	72	27	58	14	0	0.63	1.34	0.33	0	2.30	557
		73	20	65	11	3	0.65	2.10	0.36	0.11	3.23	766
		76	19	55	24	2	0.79	2.25	0.98	0.07	4.09	979
	5747	73	16	53	28	3	0.52	1.70	0.91	0.11	3.24	768
		76	12	36	39	12	0.57	1.67	1.78	0.54	4.56	1030
		78	11	32	35	21	0.52	1.56	1.70	1.05	4.83	1028
	Minuette	73	10	41	41	8	0.30	1.27	1.27	0.25	3.09	714
		76	8	35	35	22	0.30	1.34	1.34	0.83	3.82	812
	76-110	73	23	66	11	0	0.54	1.56	0.25	0	2.36	570
		76	19	47	29	6	0.57	1.41	0.87	0.18	3.04	710
		78	17	43	31	9	0.57	1.49	1.05	0.33	3.43	787
	2 May 29	5446	64	19	67	11	4	0.71	2.50	0.40	0.15	3.75
66			14	67	15	4	0.60	2.94	0.65	0.18	4.34	1033
68			5	42	36	16	0.24	2.21	1.92	0.83	5.21	1149
5600		64	38	56	6	0	1.47	2.18	0.22	0	3.86	934
		66	27	65	8	0	1.14	2.79	0.36	0	4.30	1040
		68	13	66	20	1	0.71	3.63	1.09	0.04	5.46	1315
5613		64	50	45	5	0	2.04	1.81	0.22	0	4.07	985
		66	35	61	41	0	1.22	2.14	0.15	0	3.51	849
		68	12	82	6	0	0.73	5.08	0.40	0	6.21	1502
Minuette		64	17	70	11	2	0.65	2.65	0.40	0.07	3.77	903
		66	8	63	26	3	0.33	2.61	1.09	0.15	4.17	989
		68	4	38	45	13	0.19	1.99	2.36	0.69	5.23	1173

Table 6. Performance of small sieve green bean varieties, Corvallis, 1996 (cont.).

Trial	Variety	Days	Percent Sieve Size ²				Tons/Acre Sieve Size					\$/Acre ^w
			2 ^y	3	4	5	2	3	4	5	Graded Total [*]	
3 June 14	5446	61	17	47	27	9	0.98	2.72	1.52	0.51	5.73	1318
		62	16	50	26	8	1.11	3.37	1.74	0.54	6.77	1565
	5600	62	31	63	6	0	1.06	2.18	0.22	0	3.45	836
		66	27	60	12	0	1.50	3.34	0.69	0	5.52	1336
		68	18	57	23	2	1.28	3.95	1.60	0.11	6.93	1663
	5613	63	42	51	6	0	1.74	2.10	0.25	0	4.10	991
		67	19	69	10	2	1.17	4.28	0.62	0.11	6.17	1479
	5747	61	21	36	25	18	1.20	2.07	1.41	1.02	5.69	1241
		66	16	30	21	24	1.17	2.25	1.60	1.78	6.79	1405
	Minuette	61	23	58	20	0	1.09	2.76	0.94	0	4.79	1158
62		19	60	20	1	1.03	3.26	1.09	0.07	5.46	1311	
4 June 26	5446	62	26	57	16	1	0.98	2.10	0.58	0.04	3.70	890
		64	16	49	30	5	0.87	2.61	1.63	0.25	5.37	1264
	5600	65	21	70	8	1	0.95	3.08	0.36	0.04	4.43	1068
		69	13	67	17	2	0.84	4.28	1.09	0.15	6.35	1518
		70	10	63	25	2	0.57	3.73	1.52	0.15	5.97	1426
	5613	65	43	56	1	0	1.79	2.36	0.04	0	4.19	1013
		69	17	66	17	0	0.92	3.70	0.98	0	5.60	1355
	Minuette	63	18	68	14	0	0.63	2.28	0.47	0	3.38	818
		65	10	65	23	3	0.38	2.54	0.91	0.11	3.93	937
	5 July 2	5446	65	11	48	36	5	0.79	3.52	2.65	0.36	7.31
67			8	40	39	13	0.60	3.08	3.01	0.98	7.67	1724
5600		69	31	60	4	0	1.93	3.73	0.22	0	5.88	1458
		71	29	62	8	0	1.79	3.81	0.51	0	6.11	1478
5613		69	21	79	0	0	1.50	5.73	0	0	7.22	1748
		71	18	72	9	0	1.33	5.29	0.69	0	7.31	1770
5747		66	17	48	30	5	1.09	3.01	1.89	0.29	6.27	1479
		70	9	34	38	18	0.63	2.47	2.79	1.34	7.22	1568
Minuette		69	13	63	23	2	0.76	3.77	1.38	0.11	6.02	1442
		71	6	61	30	3	0.44	4.13	2.07	0.18	6.82	1625
76-110		69	21	65	14	1	0.87	2.72	0.58	0.04	4.21	1013
		71	14	67	16	3	0.73	3.44	0.80	0.15	5.12	1220

²Percent calculated as % of total of 2-5 sieve beans.

^y2 sieve values calculated as 75% of the combined 1 + 2 sieve weights from grader.

^{*}Total weight of graded beans, including sieve sizes 2-5.

^w\$/acre based on \$242/ton for 2-4 sieve; \$108/ton for 5 sieve.

Table 7. Statistical comparison of yields and dollar return of small sieve green bean lines, Corvallis, 1996.²

	Variety	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	AV
T/A	5446	4.5	4.6	5.7	5.4	7.2	5.5
	5600	3.3	5.9	5.7	6.4	6.5	5.6
	5613	4.3	6.6	6.4	7.0	8.0	6.5
	5747	4.3		4.9		6.1	5.1
	Minuette	3.2	4.3	5.9	4.1	6.9	4.9
	76-110	3.2				5.3	4.3
	LSD @ 5%	NS	NS	NS	NS	NS	
\$/A	5446	1093	1118	1381	1311	1740	1129
	5600	807	1425	1389	1558	1574	1351
	5613	1044	1600	1550	1693	1938	1565
	5747	1032		1196		1478	1235
	Minuette	781	1052	1419	981	1667	1180
	76-110	765				1281	1023
	LSD @ 5%	NS	NS	NS	NS	NS	

²Based 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. Yields are field yields of 2, 3, and 4 sieve beans.

Table 8. *Fusarium* root rot infection, Corvallis, 1996.

Line	Score ^z		
	Rep 1	Rep 2	Avg.
91G ^y	3.5	3	3.25
Oregon 54	4	4	4.0
5163	4	4	4.0
5416	3	3	3.0
5446	4	3.5	3.75
5520	3	3	3.0
5566	3	2.5	2.75
5575	2.5	2	2.25
5600	3	3	3.0
5613	3.5	2.5	3.0
5630	3	3	3.0
5635	3.5	2.5	3.0
5651	4	3	3.5
5669	2.5	2.5	2.5
5681	3.5	3.5	3.5
5698	3	3	3.0
5747	3	2.5	2.75
5766	2.5	2	2.25
5778	2	2.5	2.25
B7126-33-1-2	3	3	3.0
B7126-33-2-1	3	2	2.5
B7126-54-2-1	2.5	3	2.75
B7237-13	3	2	2.5
B7239-5-1	4	3	3.5
B7239-11-1	2	3	2.5
B7239-11-2	3	2	2.5

Table 8. Fusarium root rot infection, Corvallis, 1996 (cont.).

Line	Score ^z		
	Rep 1	Rep 2	Avg.
B7240-2	3	2	2.5
DM3NY1	2	2	2.0
DM4NY6	3	3	3.0
DM6NY1	2.5	2.5	2.5
Minuette	3.5	3	3.25
76-110	4	3	3.5
WIS 46 RR	1.5	2	1.75
WIS 83 RR	2.5	1.5	2.0
RR 4270	1	1	1.0
RR 6950	0.5	0.5	0.5

^zScores: 1-5 scale, 1 = no or very slight surface infection, 5 = roots mostly dead, plants severely stunted.

^yEach value is an average of 2 plots.

Table 9. White mold infection, Corvallis, 1996.²

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
91G	9	5	6	10	7.5
Oregon 54	8	5	6	9	7.0
5163	7	7	7	5	6.5
5416	7	7	5	3	5.5
5446	6	3	8	4	5.25
5520	7	6	6	7	6.5
5566	7	6	4	5	5.5
5575	6	4	4	6	5
5600	4	6	5	3	4.5
5613	7	7	4	3	5.25
5630	6	9	6	8	7.25
5635	7	8	9	7	7.75
5651	9	7	7	9	8.0
5669	9	5	4	10	7.0
5681	9	7	6	7	7.25
5698	7	4	4	5	5.0
5747	5	2	2	4	3.25
5766	6	6	4	5	5.25
5778	7	9	6	8	7.5
B7030-24	7	7	5	5	6.0
B7126-1-1-1	4	2	4	4	3.5
B7126-33-1-2	5	3	4	5	4.25
B7126-33-2-1	4	5	4	4	4.25
B7126-54-2-1	6	6	5	5	5.5
B7237-11-3	4	5	4	2	3.75
B7238-15	4	8	4	4	5.0
B7238-22	6	4	5	3	4.5
B7239-4	5	2	5	3	3.75
B7239-5-2	4	6	4	5	4.75
B7239-5-4	4	3	4	5	4.0
B7239-11-1	3	3	2	1	2.25
B7239-11-2	4	4	3	4	3.75
B7239-11-3	5	4	2	2	3.25
DM3NY1	6	5	6	6	5.75

Table 9. White mold infection, Corvallis, 1996 (cont.).²

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
DM4NY6	5	5	5	5	5.0
DM6NY1	6	6	7	5	6.0
169787	5	3	5	5	4.5
180753	4	3	4	3	3.5
204717	4	4	4	5	4.25
225846	2	2	2	3	2.25
226865	2	2	3	2	2.25
824775	2	2	2	3	2.25
M0162	2	4	4	1	2.75
3525	8	7	8	5	7.0
L192	2	1	2	2	1.75
Black Valentine	6	7	8	7	7.0
Black Turtle	7	5	4	7	5.75
Gabriella	6	5	6	4	5.25
Aurora	7	8	6	8	7.25
Exrico	5	5	2	3	3.75
2235	7	6	5	5	5.75
Tendercrop	5	6	3	5	4.75
76-110	4	5	6	7	5.5
Minuette	5	6	4	3	4.5
Red Kidney	4	4	3	4	3.75

²White mold scores: 1-10 scale, 1 = low incidence, slight symptoms, 10 = high incidence, severe symptoms.

Figure 1.

STANDARD BEAN \$/A 1996 MAY 7 PLANTING

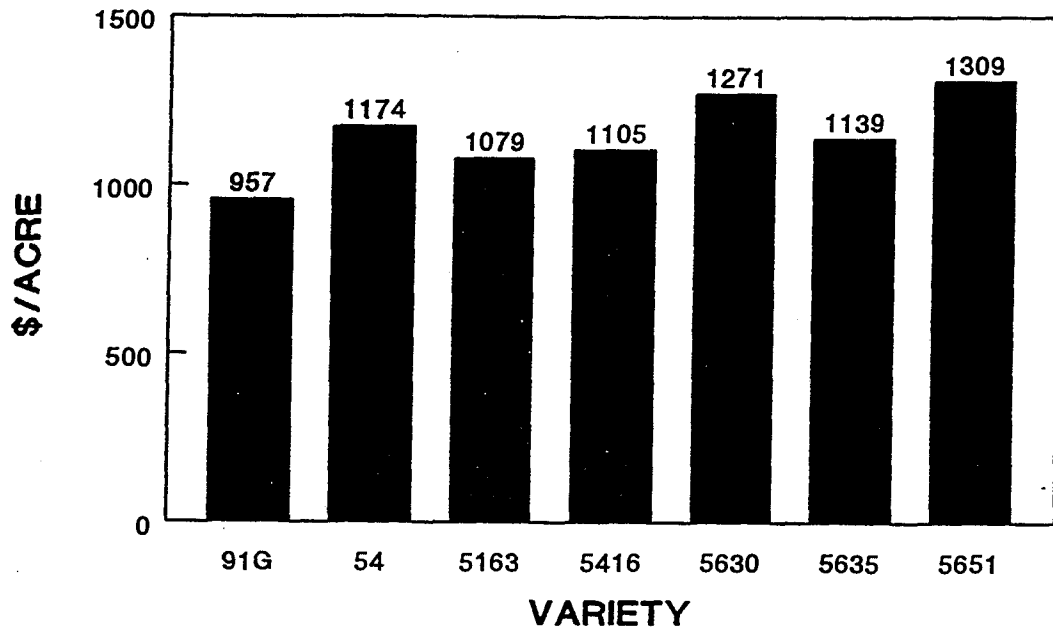


Figure 2.

STANDARD BEAN \$/A 1996 MAY 29 PLANTING

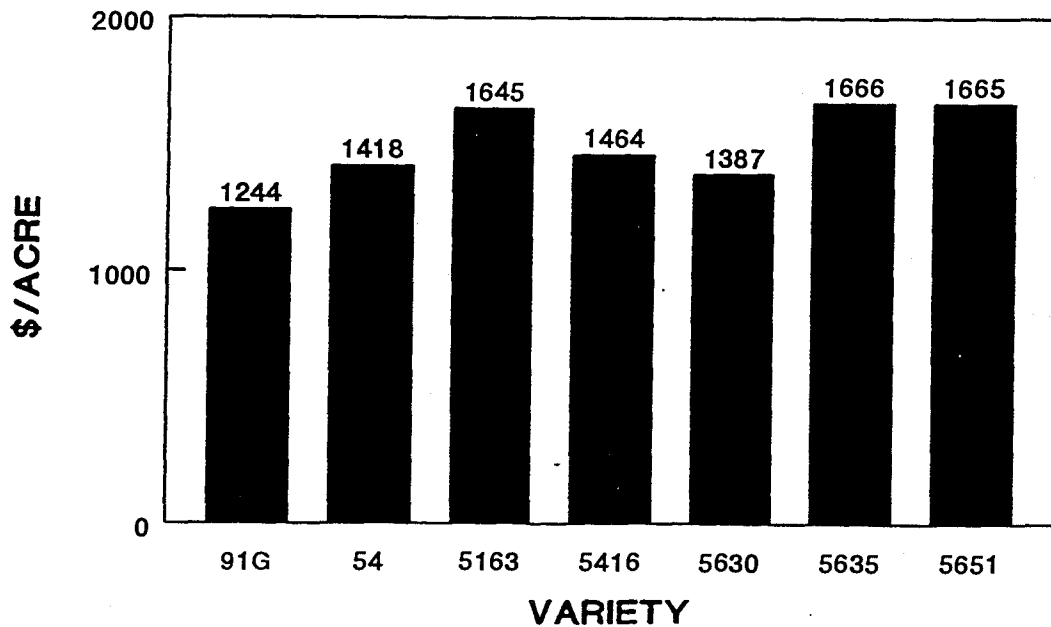


Figure 3.

STANDARD BEAN \$/A 1996 JUNE 14 PLANTING

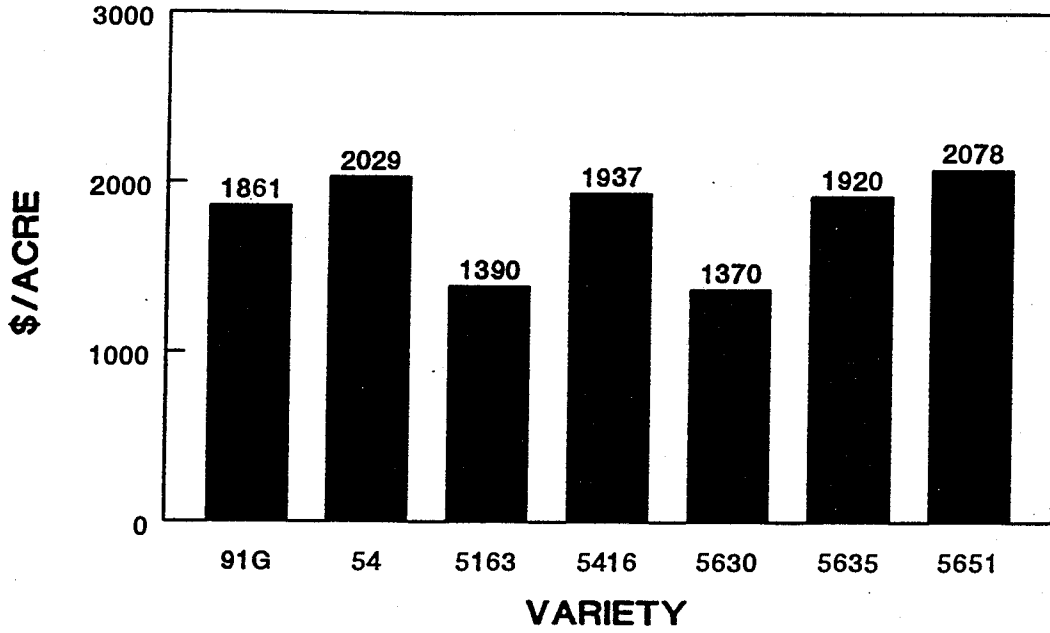


Figure 4.

STANDARD BEAN \$/A 1996 JUNE 26 PLANTING

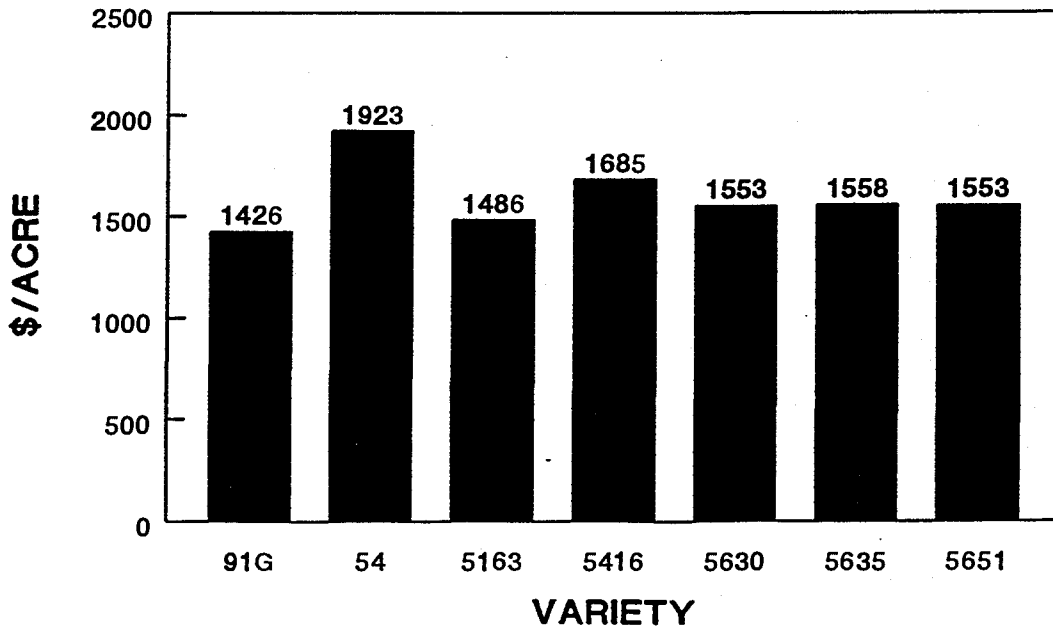


Figure 5.

STANDARD BEAN \$/A 1996 JULY 2 PLANTING

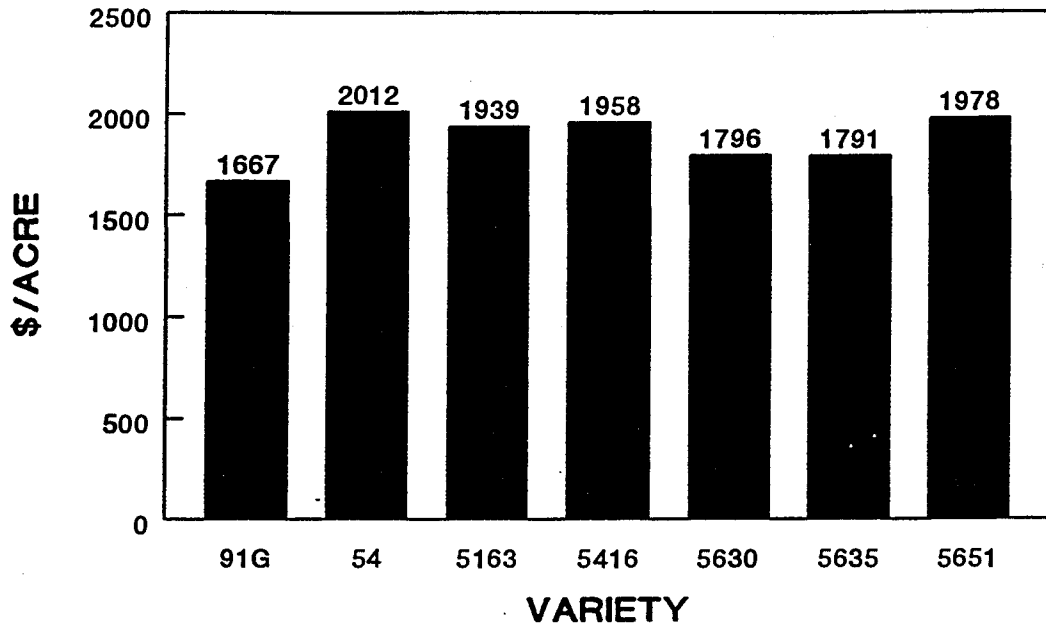


Figure 6.

STANDARD BEANS \$/ACRE 1996 SEASON AVERAGE-SELECTED HARVESTS

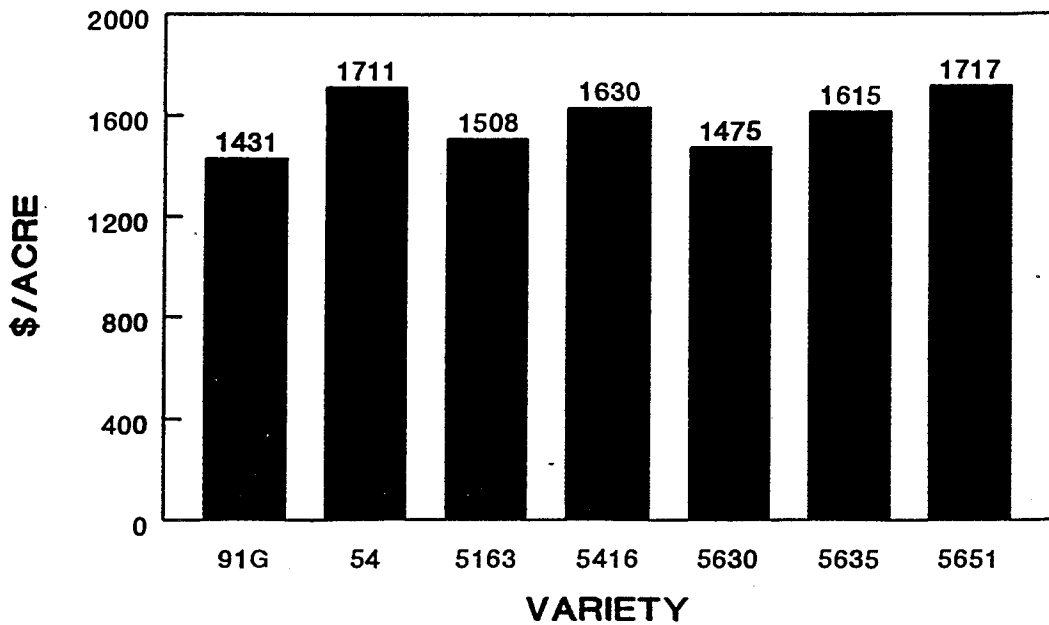


Figure 7.

**SMALL SIEVE BEAN \$/ACRE
MAY 7 AND MAY 29 PLANTINGS**

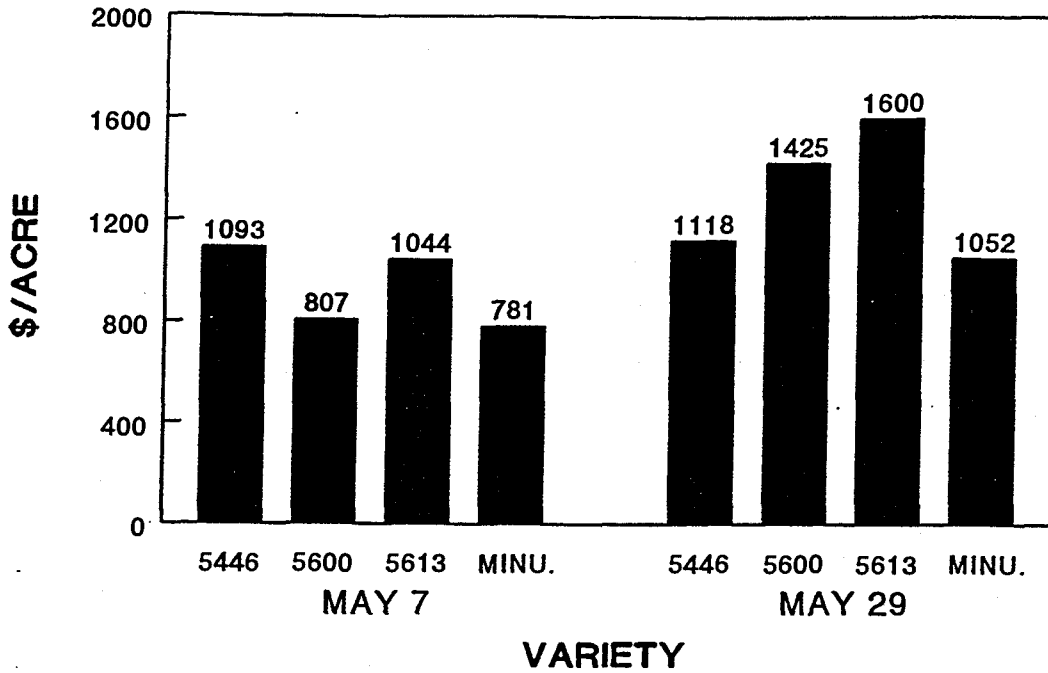


Figure 8.

**SMALL SIEVE BEANS \$/A 1996
JUNE 14 AND JUNE 26 PLANTINGS**

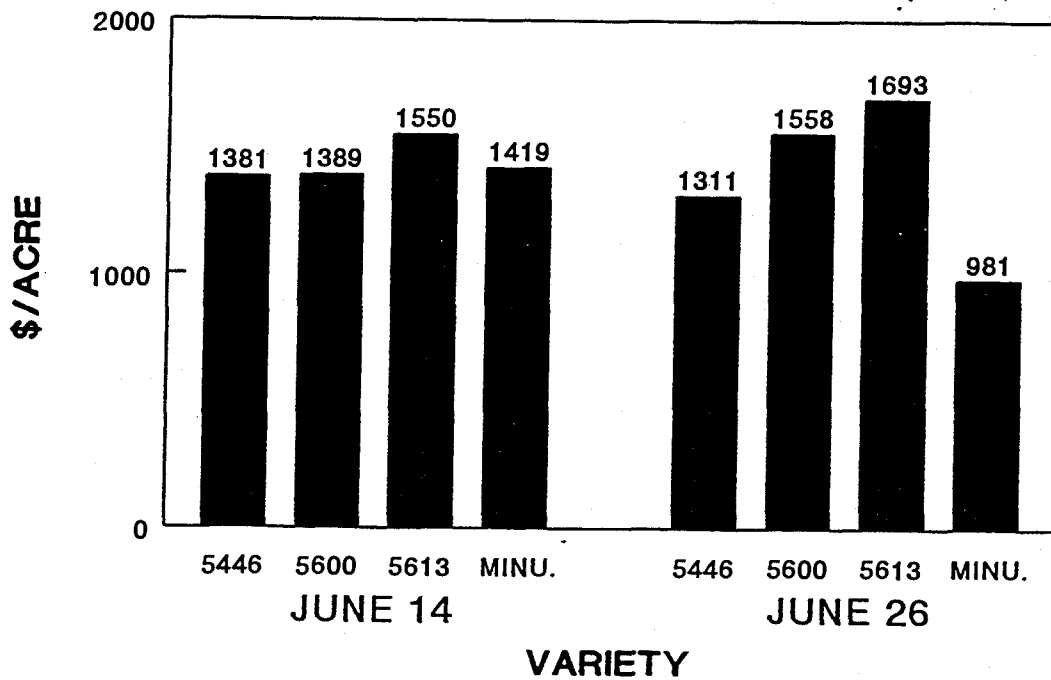


Figure 9.

**SMALL SIEVE BEANS \$/A 1996
JULY 2 AND SEASON AVERAGE**