Report to the Oregon Processed Vegetable Commission
1997-1998

1. Title: Green Bean Breeding

2. Project Leaders: James R. Myers, Horticulture
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Cooperator: David Mok

3. Project Status: Terminating 30 June, 1998

4. Project Funding: $39,450 breeding
$10,882 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:

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 tolerance, 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 yield trials planted 2 May, 14 May, 27 May, 11 June, and 25 June. The 2 May and 27 May trials were preliminary trials consisting of one row plots replicated six times. They included two commercial checks, two OSU varieties (included as checks), and 21 OSU lines. One OSU line (5566) was dropped from both trials because of a seed mixture. A second line (5712) was dropped from the second trial because of obvious deficiencies in yield and pod quality. Advanced trials consisting of two row plots replicated six times were grown on 14 May and 25 June, and included one commercial check, two OSU varieties, and seven breeding lines. The fifth trial planted 11 June had one commercial check, one OSU variety check, 16 commercial varieties or breeding lines, and six OSU lines. These were

grown as one row plots replicated six times. For all trials, five foot sections of row were hand-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 replicated trials are summarized in Tables 1-9 and Figures 1-8. The summary table below shows the dollar value for six standard sieve blue lake varieties and lines.

	Season Average $/A Based on		
Variety	**Trial Averages[z]**	**Selected Harvests[y]**	**Highest Harvest**
Oregon 91G	1570	1624	1639
Oregon 54	1591	1540	1659
OSU 5416	1636	1647	1694
OSU 5630	1660	1676	1736
OSU 5635	1646	1649	1742
OSU 5651	1715	1692	1806
$LSD_{\alpha=0.05}$	113	131	129

[z]Average of 2-3 harvests from five trials.
[y]The harvest selected as best for comparison and used for analysis of variance at 50% 1-4 sieve in Tables 1-4.

For reasons unknown to us, Oregon 54 showed poorer yield performance than expected. Oregon 54 did out yield Oregon 91G (although not significantly), but was lower yielding than the experimental lines when trial averages and highest harvest are compared.

OSU 5651 (Oregon 54 X OSU 5256) showed the best performance with significantly higher yields than the check varieties for trial average and highest harvest. For selected harvest, OSU 5651 yielded significantly better than Oregon 54, but not Oregon 91G. OSU 5651 was not significantly higher yielding than other experimental lines listed in the summary table.

Both OSU 5630 (Oregon 91G X Oregon 54) and OSU 5635 (Oregon 54 X OSU 5163) performed well this year, out-performing the checks in most trials (although generally not statistically significant). Both have better pod quality than the checks with 5630 showing exceptional pod color. We should decide whether to proceed with commercial trials of these lines.

OSU 5416 had similar pod appearance to Oregon 54 but had superior yield this year. In the past, 5416 has been regarded as less indeterminate than Oregon 54.

Standard lines in the second year of trials were 5620 (Oregon 91G X Oregon 54), 5643 (Oregon 54 X 5163), 5669 (5256 X Oregon 54), 5681 (5416 X Oregon 54, and 5698 (5256 X 5416). 5698 had the highest $/A values of lines in the trials. Other lines generally out-yielded Oregon 54, were lower yielding than Oregon 91G in trial 1, but higher yielding in trial 2.

Lines tested for the first time included 5701 (5256 X 5416), 5712, 5713, and 5714 (all 5163 X 'Greensleeves'). 5701 generally had mediocre yield, but straight and smooth pods. 5712, 5713, and 5714 had upright but leafy bush habit, with long, slender, smooth, but oval pods. Pod color was extremely dark green with these three lines. 5712 was the least acceptable horticulturally and had the lowest yields, so was dropped after one trial. Of the two remaining lines, 5714 had the highest $/A, outperforming the checks in the first trial. 5714 is probably an intermediate sieve bean that reaches maturity at approximately 60% 1-4 sieve. Decisions on 5713 and 5714 should be made after evaluation of processed pods. These lines have been crossed to the best blue lake materials to recover the exceptional pod color in a better genetic package.

Easy picking beans: Two lines, 5520, and 5575, were evaluated again this year. Neither line appears exceptional in $/A value although they generally weren't significantly different from the checks. Because of a lack of interest in the easy picking trait, these lines will be shelved.

Commercial bean trial: Although we specified that the varieties accepted for trial should be of quality comparable to blue lake types, those that we received represented a broad spectrum of materials, most of which are probably not acceptable to the industry here. One variety ('Minidor') was a wax bean, so 'Gold Rush' was included in the trial as a check. Minuette was included as a small sieve check, although it may not have been adequate for the wide range of small sieve beans that were tested. Two commercial lines were full sieve, and of these, SB 4124 had higher $/A than Oregon 91G and Oregon 54. In the intermediate sieve class, EX 378 had highest $/A, and also out yielded the OSU checks. EX 377 had high $/A in the four sieve class with better performance than Minuette. Among wax beans, Minidor (a three sieve bean) had $/A value equivalent to Gold Rush (a four sieve bean). Three green beans in the three sieve category (SB 4123, 5600, and 5613) had high $/A values that with the exception of 5600, were better than the OSU full sieve checks. Proton and Primera among the very small sieve types (2-3 sieve) had $/A values better than Minuette. The reader should keep in mind that the results reported here are from only one trial in one year; evaluation of varieties should be based on a minimum of nine year-locations. Many of these varieties exhibited excellent upright growth habit, but tended to be more leafy than blue lake material. Grader room notes indicate that pod color was generally light, but processed pod need to be evaluated. Decisions on whether to include any of these varieties in future trials should be made after processing evaluation.

Variety	Season Average $ Value from Four Trials Based on Harvest with:	
	Highest $ Value	**Highest T/A 3 Sieve**
5600	1641	1631
5613	1915	1915
Minuette	1916	1697
$LSD_{\alpha=0.05}$	123	280

Variety	Season Average $ Value from Two Trials Based on Harvest with:	
	Highest $ Value	**Highest T/A 3 Sieve**
5600	1661	1661
5613	1899	1899
Minuette	1958	1786
76-110	1513	1434
5446	1513	1434
5747	1725	1542
$LSD_{\alpha=0.05}$	359	496

Small Sieve beans: Of the two new OSU lines 5600 and 5613, the latter showed the better performance this year. It had the highest $/A value in two of three trials. Overall, it produced the highest $/A value of the small sieve beans (Figure 8.). Where the harvest was based on T/A 3 sieve, 5613 had highest $/A value. 5747 and 5446 had a mediocre performance this year, but Minuette generally performed well. It did not show the problems with heat and split set that were apparent in 1996. Reports on seed production in California indicate that 5613 has better heat tolerance than does 5600. When comparing pod color, 5600 is superior, but 5613 does not appear to be significantly different from Oregon 91G. Commercial trials should proceed with these lines.

White mold and root rot trials: Fifty-eight and 131 varieties, and breeding lines were grown in Fusarium root rot and white mold trials, respectively (Tables 10 & 11). Overall, trials were not as severe as some in past years. None of the OSU lines showed particularly strong root rot responses. In the white mold trial, 5620, 5701, 5712, and 5714 had lower incidence of white mold than did other OSU lines. These results may be related to plant architecture, so greenhouse tests should be performed to determine if physiological resistance is present.

Development and evaluation of new material: Breeding lines and released varieties representing most of the germplasm generated by the OSU program were grown and evaluated to gain an historical perspective of the program. Among contemporary materials, diverse lines of all pod sizes were evaluated in field plots for plant habit pod characteristics and yield potential. A number of single plant selections were made in F_3, F_4 and F_5 generation lines from crosses to incorporate improved growth habit into the blue lake background. About 250 F_1 crosses made in the winter greenhouse were grown. These represent crosses to recombine within blue lake types, and develop populations with resistance to white and gray mold by crossing to breeding lines from the New York (Cornell University) program.

Several F_2 populations representing crosses to 'Maxima' and Minuette were advanced by single seed descent to create recombinant inbred populations to facilitate molecular marker analysis of the blue lake complex.

Three Year Average for Full Sieve Beans

Variety	Year[z] 1995	1996	1997	Overall Average	Average Omitting Trial 4, 1995
Adjusted T/A					
Oregon 91G	9.7	9.1	9.4	9.4	9.0
Oregon 54	10.6	10.4	9.4	10.1	9.9
5416	10.5	10.3	9.8	10.2	10.0
5630	10.8	9.0	10.2	10.0	9.7
5635	11.3	9.4	10.0	10.3	10.0
5651		9.2	10.4		10.3
Average $/A					
Oregon 91G	1520	1440	1589	1516	1445
Oregon 54	1681	1651	1622	1651	1615
5416	1666	1627	1656	1650	1629
5630	1698	1427	1699	1608	1573
5635	1737	1485	1651	1624	1572
5651		1644	1754		1681

[z]Average of 2, 5, and 5 trials in 1995, 1996, and 1997, respectively.

Performance across years of advanced lines: A comparison of full sieve advanced lines over three years is shown in the above table. Where complete data are available, 5635

had the highest yield, but did not outperform Oregon 54 in $/A value. 5416 showed similar performance to 5635, and had similar $/A value to Oregon 54. With trial 4 from 1995 omitted, similar trends for all varieties were observed. Direct comparison of 5651 with other lines, showed that it had both the highest T/A and $/A value of all lines. These results suggest that over the long-term, all of the experimental lines will perform better than Oregon 91G. Only 5651 clearly shows superior performance to Oregon 54, although this evidence is based on only two years. 5651 appears to possess greater stability across trials as shown by less variation in yield and $/A from trial to trial.

Four Year Average for Small Sieve Beans

	Year[z]				Overall	Average Omitting
Variety	1994	1995	1996	1997	Average	1994 and trial 4, 1997
Adjusted T/A						
Minuette	5.2	6.0	4.6	6.7	5.6	5.8
5600	4.8	6.6	4.8	5.5	5.4	5.7
5613		6.3	5.0			6.0
Average $/A						
Minuette	1031	1245	1086	1591	1238	1327
5600	900	1190	1161	1322	1143	1239
5613		1179	1152			1303

[z]Average of 2, 2, 5, and 5 trials in 1994, 1995, 1996, and 1997, respectively.

In the above table, Minuette, 5600, and 5613 are compared over four years in a total of 14 trials (11 trials for 5613). Yields are similar with 5613 and 5600 having the highest and lowest yields respectively. For $/A value, Minuette was highest followed by 5613, then 5600. It is important to note that Minuette produces approximately one quarter of its yield in 4 sieve beans whereas neither of the OSU lines produce significant quantities in this sieve size class. These data suggest that over the long-term, 5613 will produce better yields and higher $/A values than 5600. Minuette shows less stability than the OSU lines when variances over years are compared.

8. Summary:

Twenty-one OSU bean lines were evaluated in replicated, hand-picked yield trials over the period 2 May to 25 June. Minuette was included as a small sieve control. A trial containing 16 commercial varieties and six OSU lines was planted on 11 June. Full sieve size lines of interest include 5630 and 5635, both with yields similar to or better than Oregon 91G, but with better pod characteristics. 5651 was the highest yielding line with pod quality equal to Oregon 54. Small sieve size lines of significance are 5600 and 5613,

the latter of which was equal to or better than Minuette for $/A value. 5613 has lighter color than 5600, but appears to have higher long term yields and possibly better heat tolerance. Many new crosses were made to facilitate recombination within OSU germplasm and to introduce new sources of white mold resistance into a blue lake background. Numerous selections were made in F_2 through F_5 segregating populations for plant and pod type. Recombinant inbred populations to investigate genetic control of plant architecture were initiated.

9. Signatures:

Redacted for Privacy

Project Leader: _____

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Table 1. Yields of standard green bean varieties, May 2 planting, Corvallis, 1997.[z]

Line	Av. Stand	Harvest 1					Harvest 2					Harvest 3					Av. Adj. 50%	Av. Adj. 60%
		Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Days	% 1-4	T/A	Adj. 50%	Adj. 60%		
91G	150	73	66	9.1	10.6	9.6*	75	49	10.7	10.6*	9.7	77	34	10.2	8.6	8.0	9.9	9.1
Oregon 54	150	75	56	9.6	10.1	9.3*	77	46	9.6	9.2*	8.5						9.7	8.9
5163	150	73	69	8.0	9.5	8.6	75	58	9.4	10.2	9.3*	77	51	10.2	10.3*	9.4	10.0	9.1
5416	150	75	58	9.7	10.5	9.6*	77	51	10.2	10.3*	9.4	78	39	10.0	8.9	8.3	9.9	9.1
5520	150	73	78	8.2	10.5	9.5*	75	46	9.4	9.0*	8.3	77	38	11.0	9.7	9.0	9.7	8.9
5575	150	75	50	10.5	10.5*	9.6	77	33	10.9	9.1	8.5						9.8	9.0
5620	150	75	56	9.1	9.6*	8.8*	77	38	11.3	10.0	9.2						9.8	9.0
5630	150	73	81	8.8	11.5	10.4	75	68	9.5	11.2	10.1*	78	46	10.0	9.6*	8.8	10.8	9.8
5635	150	76	58	9.4	10.1	9.2*	77	56	9.9	10.5	9.6	78	47	10.7	10.4*	9.6	10.4	9.5
5643	150	78	36	10.7	9.2*	8.6											9.2	8.6
5651	150	75	75	9.4	11.7	10.5	77	60	11.3	12.4	11.3*	80	48	10.8	10.6*	9.7	11.5	10.5
5669	147	75	50	10.0	10.0*	9.2	78	33	10.8	9.0	8.3						9.5	8.8
5681	150	76	58	10.3	11.1	10.1*	78	45	10.2	9.6*	8.9						10.4	9.5
5698	150	75	64	10.5	11.9	10.8*	77	51	10.8	10.9*	10.0	80	36	10.4	8.9	8.3	10.6	9.7
5701	150	75	69	7.8	9.2	8.3*	77	54	9.5	9.9*	9.0	80	38	9.5	8.4	7.8	9.2	8.4
5712	150	75	68	8.0	9.4	8.6*	76	44	8.5	8.0*	7.4						8.5	8.0
5713	149	76	79	9.4	12.1	10.8	78	63	8.1	9.2	8.3*	80	59	8.5	9.3*	8.4	10.2	9.2
5714	150	76	88	8.7		10.8	77	84	8.6		10.3	80	66	8.6		9.0*		10.0

[z]Mean 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. 50% = tons per acre adjusted to 50% 1-4 sieve (except 5714, which was not adjusted to 50% 1-4 sieve); adj. 60% = tons per acre adjusted to 60% 1-4 sieve. Analysis of variance (Table 5) was calculated using the harvest market with *.

Table 2. Yields of standard green bean varieties, May 27 planting, Corvallis, 1997.[a]

Line	Av. Stand	Harvest 1					Harvest 2					Harvest 3					Av. Adj. 50%	Av. Adj. 60%
		Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Days	% 1-4	T/A	Adj. 50%	Adj. 60%		
91G	150	65	45	10.6	10.1*	9.3	66	40	11.1	10.0	9.2	69	26	11.8	9.0	8.5	9.7	9.0
Oregon 54	150	66	42	9.4	8.6*	7.9	69	29	12.6	10.0	9.4						9.3	8.7
5163	150	65	50	10.3	10.3*	9.5	66	45	10.9	10.4	9.5	69	33	12.4	10.3	9.6	10.3	9.5
5416	150	65	57	10.0	10.7	9.8*	66	48	11.0	10.8*	9.9	69	32	12.6	10.3	9.7	10.6	9.8
5520	150	65	49	9.9	9.8*	9.0	66	38	11.5	10.1	9.4						10.0	9.2
5575	150	65	44	11.0	10.4*	9.6	66	28	9.3	7.2	6.8						8.8	8.2
5620	150	65	56	9.0	9.6	8.7*	66	45	10.0	9.5*	8.8	69	35	11.4	9.7	9.0	9.6	8.8
5630	150	66	45	11.1	10.5*	9.7	69	31	12.4	10.0	9.4						10.3	9.5
5635	149	65	66	9.8	11.3	10.3	66	58	9.8	10.6*	9.6*	69	37	12.9	11.3	10.5	11.0	10.1
5643	150	66	55	10.4	10.9*	10.0*	69	26	10.4	7.9	7.4						9.4	8.7
5651	150	66	57	9.2	9.8*	8.9*	69	40	10.6	9.6	8.9						9.7	8.9
5669	150	65	47	10.9	10.6*	9.7	66	44	11.0	10.3	9.5	69	31	11.2	9.1	8.5	10.0	9.2
5681	149	66	53	10.4	10.7*	9.8	69	38	11.5	10.1	9.4						10.4	9.6
5698	150	65	53	10.7	11.0*	10.0	66	45	10.8	10.3	9.5	69	29	12.5	9.9	9.3	10.4	9.6
5701	150	66	52	9.0	9.2*	8.4	69	39	11.8	10.5	9.7						9.8	9.1
5713	145	66	84	8.0	10.7	9.6	69	57	9.1	9.8*	8.9*						10.3	9.3
5714	149	66	83	8.6		10.2	69	60	8.6		8.6*							9.4

[a]Mean 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. 50% = tons per acre adjusted to 50% 1-4 sieve (except 5714, which was not adjusted to 50% 1-4 sieve); adj. 60% = tons per acre adjusted to 60% 1-4 sieve. Analysis of variance (Table 5) was calculated using the harvest marked with *.

Table 3. Yields of selected OSU green bean lines on two planting dates, Corvallis, 1997.[z]

Trial	Line	Av. Stand	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Av. Adj. T/A 50%	Av. Adj. T/A 60%
2 May 14	91G	150	69	62	8.7	9.8	8.9	9.9	9.1
			70	58	9.5	10.3	9.4*		
			71	48	10.7	10.5*	9.7		
			72	35	10.4	8.9	8.3		
	Oregon 54	150	71	50	10.0	10.0*	9.2	9.9	9.1
			72	46	10.6	10.2	9.4		
			73	43	10.1	9.4	8.7		
	5163	150	71	55	10.3	10.8	9.9	10.2	9.3
			72	57	10.1	10.8	9.8*		
			73	48	9.9	9.7*	8.9		
			75	43	10.2	9.5	8.8		
	5416	150	71	47	10.3	10.0*	9.2	9.9	9.2
			72	42	10.7	9.8	9.1		
	5630	150	71	62	9.7	10.8	9.8*	9.5	8.7
			72	51	10.0	10.1*	9.1		
			73	49	8.8	8.7	8.0		
			75	53	8.3	8.6	7.8		
	5635	146	69	84	8.1	10.8	9.7	11.1	10.1
			71	66	9.6	11.2	10.1		
			72	57	10.7	11.4	10.4*		
			73	45	11.4	10.8*	10.0		
	5651	150	70	77	8.7	11.1	10.0	10.9	9.9
			72	58	10.2	11.0	10.0*		
			73	50	10.9	10.9*	10.0		
			75	45	11.0	10.4	9.6		
4 June 25	91G	145	59	74	6.2	7.7	6.9*	7.9	7.2
			61	54	8.0	8.3*	7.6		
			63	33	9.2	7.6	7.1		
	Oregon 54	150	61	56	7.9	8.4*	7.6*	8.4	7.7
			63	42	9.2	8.5	7.8		
	5163	150	59	79	6.6	8.5	7.6	9.1	8.3
			61	62	8.8	9.9	8.9*		
			63	48	9.5	9.3*	8.6		
			64	41	9.8	8.9	8.2		
	5416	149	59	73	6.9	8.5	7.6*	8.6	7.9
			61	51	8.9	9.0*	8.2		
			63	37	9.7	8.4	7.8		

Table 3. Yields of selected OSU green bean lines on two planting dates, Corvallis, 1997 (cont.).[z]

Trial	Line	Av. Stand	Days	% 1-4	T/A	Adj. 50%	Adj. 60%	Av. Adj. T/A 50%	Av. Adj. T/A 60%
4 June 25 (cont.)	5630	150	59	83	7.8	10.4	9.3	9.4	8.5
			61	61	8.6	9.5*	8.7*		
			63	37	9.5	8.3	7.7		
	5635	150	61	74	6.6	8.2	7.4	8.6	7.9
			62	68	8.2	9.7	8.7		
			63	61	7.9	8.8*	8.0*		
			64	36	9.2	7.9	7.4		
	5651	147	61	79	8.8	11.4	10.2	10.3	9.3
			63	62	9.5	10.6	9.7*		
			64	52	10.2	10.4*	9.5		
			65	45	9.1	8.6	8.0		

[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 *.

Table 4. Dollar return/acre for standard OSU lines, 1997.[z]

Trial	Line	Harvest 1			Harvest 2			Harvest 3			Harvest 4			Avg.
		Days	%	$	Days	%	$	Days	%	$	Days	%	$	$/A[y]
1	91G	73	66	1652	75	49	1720	77	34	1494				1622
May 2	Ore. 54	75	56	1679	77	46	1547							1613
	5163	73	69	1485	75	58	1688	77	51	1718				1630
	5416	75	58	1706	77	51	1655	78	39	1533				1631
	5520	73	78	1625	75	46	1493	77	38	1677				1598
	5575	75	50	1711	77	33	1539							1625
	5620	75	56	1573	77	38	1721							1647
	5630	73	81	1825	75	68	1729	78	46	1601				1718
	5635	76	58	1663	77	56	1754	78	47	1729				1715
	5643	76	52	1580	78	36	1594							1587
	5651	75	75	1863	75	60	2033	80	48	1761				1886
	5669	75	50	1672	78	33	1575							1624
	5681	76	58	1846	78	45	1619							1733
	5698	75	64	1933	77	51	1790	80	36	1567				1763
	5701	75	69	1444	77	54	1628	80	38	1435				1502
	5712	75	62	1416	76	44	1306							1361
	5713	76	79	1881	78	63	1484	80	59	1522				1629
	5714	76	88	1855	77	84	1757	80	66	1554				1722
2	91G	69	62	1561	70	58	1710	71	48	1781	72	35	1816	1717
May 14	Ore. 54	71	50	1741	72	46	1817	73	43	1726				1761
	5163	71	55	1831	72	57	1834	73	48	1645	75	43	1690	1750
	5416	71	47	1785	72	42	1804							1795
	5630	71	62	1777	72	51	1747	73	49	1514	75	53	1454	1623
	5635	69	84	1629	71	66	1772	72	57	1943	73	45	1939	1821
	5651	70	77	1732	72	58	1820	73	50	1913	75	45	1881	1837
3	91G	65	45	1679	66	40	1698	69	26	1584				1654
May 27	Ore. 54	66	42	1452	69	29	1768							1610
	5163	65	50	1709	66	45	1755	69	33	1790				1751
	5416	65	57	1661	66	48	1762	69	32	1732				1718
	5520	65	49	1603	66	38	1724							1664
	5575	65	44	1694	66	28	1279							1487
	5620	65	56	1421	66	45	1613	69	35	1542				1525
	5630	66	45	1774	69	31	1766							1770
	5635	65	66	1738	66	58	1675	69	37	1896				1770
	5643	66	55	1775	69	26	1383							1579
	5651	66	57	1596	69	40	1628							1612
	5669	65	47	1819	66	44	1747	69	31	1614				1727
	5681	66	53	1742	69	38	1684							1713
	5698	65	53	1814	66	45	1637	69	29	1652				1701
	5701	66	52	1493	69	39	1765							1629
	5713	66	84	1675	69	57	1574							1625
	5714	66	83	1769	69	60	1510							1640

Table 4. Dollar return/acre for standard OSU lines, 1997 (cont.).[z]

Trial	Line	Harvest 1			Harvest 2			Harvest 3			Harvest 4			Avg.
		Days	%	$	Days	%	$	Days	%	$	Days	%	$	$/A[y]
4	91G	59	74	1173	61	54	1368	63	33	1349				1297
June 25	Ore. 54	61	56	1378	63	42	1448							1413
	5163	59	79	1303	61	62	1601	63	48	1542	64	41	1506	1488
	5416	59	73	1313	61	51	1468	63	37	1442				1408
	5630	59	83	1595	61	61	1546	63	37	1418				1520
	5635	61	74	1299	62	68	1505	63	61	1418	64	36	1369	1398
	5651	61	79	1810	63	62	1731	64	52	1717	65	45	1447	1676

[z]Dollar values were calculated using the weight of graded beans, based 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. 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 and dollar return of standard OSU lines, Corvallis, 1997.[z]

	Line	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average[y]
T/A	91G	10.6	10.5	10.1	8.3	9.6	9.8
adj. 50%	Ore. 54	9.2	10.0	8.6	8.4	9.9	9.2
	5163	10.3	9.7	10.3	9.3		9.9
	5416	10.3	10.0	10.8	9.0	10.0	10.0
	5520	9.0		9.8			9.4
	5575	10.5		10.4			10.4
	5620	9.6		9.5			9.6
	5630	9.6	10.1	10.5	9.5	10.9	10.1
	5635	10.4	10.8	10.6	8.8	9.1	10.0
	5643	9.2		10.9			10.1
	5651	10.6	10.9	9.8	10.4	9.5	10.2
	5669	10.0		10.6			10.3
	5681	9.6		10.7			10.2
	5698	10.9		11.0			11.0
	5701	9.9		9.2			9.5
	5712	8.0					8.0
	5713	9.3		9.8			9.5
	LSD @ 5%	1.2	NS	1.2	1.5	1.6	
T/A	91G	9.6	9.4		6.9	8.8	8.7
adj. 60%	Ore. 54	9.3			7.6		8.4
	5163	9.3	9.8		9.0		9.4
	5416	9.6		9.8	7.6	9.8	9.2
	5520	9.5					9.5
	5575						
	5620	8.8		8.7			8.8
	5630	10.1	9.8		8.7	9.9	9.6
	5635	9.2	10.4	9.6	8.0	8.5	9.2
	5643			10.0			10.0
	5651	11.3	10.0	8.9	9.7	9.3	9.8
	5669						
	5681	10.1					10.1
	5698	10.8					10.8
	5701	8.3					8.3
	5712	8.2					8.2
	5713	8.3		8.9			8.6
	5714	9.0		8.6			8.8
	LSD @ 5%	1.1	NS	0.8	1.6	NS	

Table 5. Statistical comparison of yields and dollar return of standard OSU lines, Corvallis, 1997 (cont.).[z]

	Line	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average[y]
$/A	91G	1844	1824	1765	1434	1655	1705
adj. 50%	Ore. 54	1632	1746	1531	1444	1712	1613
	5163	1795	1695	1796	1631		1729
	5416	1791	1756	1873	1561	1730	1742
	5520	1600		1693			1646
	5575	1832		1825			1828
	5620	1667		1678			1673
	5630	1690	1750	1856	1629	1863	1758
	5635	1831	1911	1800	1504	1552	1720
	5643	1675		1880			1777
	5651	1858	1905	1670	1798	1646	1776
	5669	1757		1847			1802
	5681	1712		1845			1779
	5698	1915		1894			1905
	5701	1705		1591			1648
	5712	1418					1418
	5713	1593		1674			1633
	LSD @ 5%	216	NS	214	255	265	
$/A	91G	1774	1322		1193	1655	1486
adj. 60%	Ore. 54	1742			1030		1386
	5163	1740	1387		1196		1441
	5416	1798		1389	958	1831	1606
	5520	1746					1746
	5575						
	5620	1659		1636			1648
	5630	1890	1447		1259	1863	1615
	5635	1739	1453	1800	1076	1576	1529
	5643			1880			1880
	5651	2116	1402	1670	1367	1728	1657
	5669						
	5681	1901					1901
	5698	2022					2022
	5701	1545					1545
	5712	1528					1528
	5713	1557		1674			1615
	5714	1680		1601			1641
	LSD @ 5%	209	NS	144	298	NS	

[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. Yields and $ value are based on field yields of 2-6 sieve beans. Due to missed harvests, not all varieties were adjusted to 60%. 5714 is a smaller sieve bean and therefore was not adjusted to 50% 1-4 sieve.

[y]Overall average is a rough estimate because of non-uniform number of trials included.

Table 6. Performance of small sieve green bean varieties, Corvallis, 1997.

Trial	Line	Days	Percent Sieve Size[z]				Tons/Acre Sieve Size					$/Acre[w]
			2[y]	3	4	5	2	3	4	5	Graded Total[x]	
1 May 2	Minuette	73	18	79	3	0	0.95	4.24	0.18	0.00	5.37	1301
		75	6	73	20	0	0.44	5.11	1.41	0.00	6.96	1684
		77	4	65	31	0	0.30	5.29	2.54	0.04	8.17	1971
	76-110	73	28	68	4	0	1.39	3.37	0.22	0.00	4.98	1204
		75	14	72	14	1	0.76	3.95	0.76	0.04	5.51	1329
		77	12	73	14	1	0.71	4.42	0.83	0.07	6.04	1451
	5446	69	28	54	17	1	1.31	2.50	0.76	0.04	4.60	1109
		70	13	56	30	2	0.57	2.54	1.34	0.07	4.52	1085
		73	10	43	36	11	0.57	2.39	2.03	0.62	5.61	1275
	5600	73	43	57	0	0	2.09	2.83	0.00	0.00	4.92	1191
		75	27	68	5	0	1.33	3.34	0.25	0.00	4.92	1191
		77	24	67	9	1	1.63	4.57	0.58	0.04	6.82	1644
	5613	75	32	67	1	0	2.01	4.24	0.07	0.00	6.33	1531
		77	23	74	3	0	1.47	4.79	0.22	0.00	6.47	1566
		80	11	82	7	0	0.82	6.20	0.51	0.00	7.52	1820
	5747	76	15	51	29	5	1.03	3.59	1.99	0.36	6.98	1640
		78	11	39	40	9	0.84	2.90	3.01	0.69	7.44	1708
2 May 14	Minuette	69	7	63	28	1	0.49	4.35	1.96	0.07	6.87	1653
		70	6	48	44	1	0.49	3.99	3.66	0.11	8.25	1981
		71	4	50	43	3	0.33	3.99	3.44	0.25	8.01	1905
		73	3	26	63	8	0.30	2.39	5.76	0.76	9.22	2128
	5600	69	45	55	0	0	2.53	3.12	0.00	0.00	5.65	1366
		71	20	78	2	0	1.36	5.29	0.11	0.00	6.76	1636
		73	11	84	5	0	0.84	6.31	0.36	0.00	7.51	1818
		75	8	87	6	0	0.57	6.45	0.44	0.00	7.46	1805
	5613	69	39	60	1	0	2.34	3.55	0.04	0.00	5.93	1434
		71	23	76	1	0	1.79	5.87	0.07	0.00	7.74	1873
		73	14	81	3	2	1.03	6.05	0.22	0.18	7.49	1787
		75	11	85	4	0	0.98	7.83	0.33	0.04	9.17	2215

Table 6. Performance of small sieve green bean varieties, Corvallis, 1997 (cont.).

Trial	Line	Days	Percent Sieve Size[z]				Tons/Acre Sieve Size					$/Acre[w]
			2[y]	3	4	5	2	3	4	5	Graded Total[x]	
3 May 27	Minuette	64	11	71	19	0	0.71	4.68	1.23	0.00	6.62	1601
		66	5	44	50	1	0.44	3.66	4.13	0.11	8.34	2003
		69	2	21	62	15	0.16	1.85	5.44	1.31	8.75	1944
	76-110	64	31	63	6	0	1.55	3.12	0.29	0.00	4.96	1200
		66	13	65	22	1	0.76	3.81	1.27	0.04	5.87	1416
		69	9	46	42	3	0.63	3.05	2.76	0.18	6.61	1575
	5446	62	16	52	28	4	1.03	3.26	1.78	0.25	6.33	1497
		64	11	37	42	10	0.84	2.94	3.30	0.76	7.84	1795
		66	6	27	40	26	0.54	2.32	3.37	2.18	8.45	1748
	5600	64	37	62	1	0	1.58	2.68	0.04	0.00	4.30	1040
		66	25	70	5	0	1.28	3.63	0.25	0.00	5.16	1248
		69	15	67	18	0	1.06	4.64	1.23	0.00	6.93	1678
	5613	65	20	77	3	0	1.06	3.99	0.15	0.00	5.19	1257
		66	17	81	1	0	0.95	4.46	0.07	0.00	5.48	1327
		69	13	78	9	1	1.03	6.38	0.73	0.07	8.21	1977
	5747	62	24	64	12	1	1.09	2.94	0.54	0.04	4.60	1109
		64	15	60	24	1	0.90	3.63	1.41	0.07	6.01	1444
		66	9	34	45	11	0.68	2.65	3.48	0.87	7.68	1741
4 June 25	Minuette	61	7	65	27	1	0.33	3.19	1.31	0.07	4.89	1175
		63	3	42	48	6	0.19	2.36	2.68	0.36	5.59	1305
		64	4	46	43	7	0.22	2.79	2.65	0.44	6.09	1415
	5600	58	67	33	0	0	1.47	0.73	0.00	0.00	2.19	531
		61	30	65	5	0	1.41	3.05	0.25	0.00	4.71	1140
		63	19	73	8	1	1.11	4.31	0.47	0.04	5.94	1432
		64	11	70	17	1	0.60	3.81	0.94	0.07	5.42	1302

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

[y]2 sieve values calculated as 75% of the combined 1 + 2 sieve weights from grader.

[x]Total weight of graded beans, including sieve sizes 2-5. Values will be lower than those reported in Table 7 because some beans are lost in the grading process.

[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, 1997.[z]

	Variety	Trial 1	Trial 2	Trial 3	Trial 4	Comm. Trial	Average[y]
T/A	Minuette	8.6	8.7	8.9	6.6	6.8	7.9
	76-110	6.6		7.1			6.8
	5446	6.0		8.4			7.2
	5600	7.6	8.1	7.9	6.6	7.0	7.4
	5613	8.1	9.9	8.9		7.1	8.5
	5747	8.1		8.0			8.1
	LSD @ 5%	1.6	1.0	1.4	NS	NS	
$/A	Minuette	2083	2099	2134	1525	1630	1894
	76-110	1577		1693			1635
	5446	1359		1934			1647
	5600	1837	1947	1904	1582	1693	1793
	5613	1965	2385	2139		1718	2052
	5747	1864		1817			1841
	LSD @ 5%	374	242	339	NS	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. Yields are field yields of 2, 3, and 4 sieve beans.

[y]Overall average is a rough estimate because of non-uniform number of trials included.

Table 8. Performance of commercial green bean varieties, Corvallis, 1997.

Variety	Source	Intended Use	Days	Percent Sieve Size[z]					Tons/Acre Sieve Size						$/Acre[w]
				2[y]	3	4	5	6	2	3	4	5	6	Graded Total[x]	
Oregon 91G	OSU	full sieve	61	11	40	35	14	0	0.82	2.86	2.47	0.98	0.00	7.12	1593
			63	7	17	29	43	4	0.60	1.52	2.54	3.77	0.36	8.79	1574
			65	6	14	21	53	7	0.52	1.34	1.92	4.93	0.62	9.33	1514
Oregon 54	OSU	full sieve	64	8	16	26	44	6	0.68	1.45	2.39	3.95	0.58	9.05	1584
			65	6	15	24	49	7	0.52	1.38	2.18	4.46	0.65	9.18	1537
5416	OSU	full sieve	61	12	41	36	9	1	0.82	2.83	2.50	0.65	0.07	6.87	1565
			63	7	24	35	33	2	0.60	2.10	3.08	2.90	0.15	8.83	1728
			65	6	16	30	43	5	0.54	1.41	2.68	3.84	0.47	8.95	1589
5630	OSU	full sieve	61	11	41	40	9	0	0.76	2.86	2.83	0.62	0.00	7.07	1628
			63	5	24	43	28	1	0.41	1.96	3.48	2.25	0.07	8.17	1665
			64	7	15	33	43	2	0.68	1.38	3.12	4.02	0.22	9.42	1710
5635	OSU	full sieve	63	10	31	31	27	2	0.76	2.43	2.47	2.10	0.15	7.90	1611
			64	7	24	31	35	3	0.52	1.89	2.39	2.76	0.22	7.77	1481
			65	7	23	32	35	3	0.54	1.78	2.47	2.76	0.25	7.79	1483
5651	OSU	4-5 sieve	63	10	34	35	20	0	0.73	2.50	2.57	1.45	0.04	7.30	1566
			64	7	21	38	34	0	0.57	1.74	3.19	2.90	0.04	8.44	1648
			66	4	19	28	45	3	0.35	1.56	2.36	3.77	0.29	8.33	1471
Gold Rush	check	4 sieve	63	10	57	32	1	0	0.54	3.15	1.74	0.07	0.00	5.51	1324
			65	6	45	43	5	0	0.44	3.12	3.01	0.36	0.00	6.92	1627
			68	4	34	55	7	0	0.30	2.36	3.77	0.47	0.00	6.90	1606
Minidor	Crites Moscow (Pop Vriend)	3 sieve	61	50	50	1	0	0	1.85	1.85	0.04	0.00	0.00	3.73	904
			63	31	67	2	0	0	1.66	3.63	0.11	0.00	0.00	5.39	1305
			65	21	73	6	1	0	1.39	4.75	0.36	0.04	0.00	6.53	1576
Primera	Crites Moscow (Pop Vriend)	2 sieve	58	100	0	0	0	0	3.67	0.00	0.00	0.00	0.00	3.67	888
			61	98	2	0	0	0	4.16	0.07	0.00	0.00	0.00	4.23	1024
			63	91	9	0	0	0	4.65	0.47	0.00	0.00	0.00	5.12	1239

Table 8. Performance of commercial green bean varieties, Corvallis, 1997 (cont.).

Variety	Source	Intended Use	Days	Percent Sieve Size[z]					Tons/Acre Sieve Size						$/Acre[w]
				2[y]	3	4	5	6	2	3	4	5	6	Graded Total[x]	
Salou	Crites Moscow (Pop Vriend)	4-5 sieve	61	6	21	37	33	2	0.33	1.12	1.96	1.74	0.11	5.26	1024
			63	5	13	24	52	6	0.30	0.76	1.41	3.08	0.36	5.92	971
			65	3	10	21	57	8	0.27	0.80	1.67	4.42	0.65	7.81	1210
Cantare	Crites Moscow (Pop Vriend)	3 sieve	58	40	59	1	0	0	1.01	1.49	0.04	0.00	0.00	2.53	612
			61	14	84	2	0	0	0.87	5.22	0.11	0.00	0.00	6.20	1500
			63	11	82	7	0	0	0.71	5.51	0.47	0.00	0.00	6.69	1619
Highway	Crites Moscow (Pop Vriend)	4 sieve	63	8	34	50	7	0	0.54	2.21	3.19	0.47	0.00	6.42	1490
			65	6	21	55	18	0	0.46	1.67	4.28	1.38	0.00	7.78	1699
			68	3	16	48	32	1	0.27	1.23	3.77	2.54	0.07	7.88	1558
Scuba	Crites Moscow (Pop Vriend)	4 sieve	61	7	50	39	3	0	0.38	2.61	2.03	0.18	0.00	5.20	1235
			63	6	33	50	10	0	0.41	2.21	3.34	0.69	0.00	6.64	1515
			65	4	18	55	23	0	0.27	1.31	4.02	1.67	0.00	7.27	1535
SB4123	Novartis (Rogers)	3 sieve	63	77	23	0	0	0	3.21	0.94	0.00	0.00	0.00	4.15	1004
			65	55	45	0	0	0	2.88	2.32	0.00	0.00	0.00	5.20	1259
			68	32	68	0	0	0	2.04	4.28	0.00	0.00	0.00	6.32	1529
SB4124	Novartis (Rogers)	full sieve	62	14	28	32	25	1	1.17	2.32	2.65	2.07	0.07	8.27	1716
			64	7	15	20	44	14	0.65	1.45	1.92	4.24	1.31	9.57	1573
			65	6	12	16	49	16	0.65	1.23	1.63	4.97	1.56	10.04	1556
EX 390	Seminis	3 sieve	61	37	61	2	0	0	1.47	2.39	0.07	0.00	0.00	3.93	952
			63	8	85	7	0	0	0.41	4.21	0.36	0.00	0.00	4.98	1204
			65	7	68	23	1	0	0.44	4.06	1.38	0.07	0.00	5.95	1429
EX 377	Seminis	4 sieve	61	10	52	38	1	0	0.57	3.08	2.25	0.07	0.00	5.97	1436
			63	5	32	53	11	0	0.33	2.28	3.84	0.76	0.00	7.21	1644
			65	3	27	56	15	0	0.16	1.70	3.55	0.98	0.00	6.40	1417
EX 371	Seminis	full sieve	58	4	41	41	14	1	0.19	1.96	1.96	0.65	0.04	4.79	1068
			61	4	18	32	45	1	0.30	1.38	2.54	3.52	0.11	7.84	1411
			63	3	11	21	57	8	0.24	0.98	1.92	5.15	0.69	8.98	1391

Table 8. Performance of commercial green bean varieties, Corvallis, 1997 (cont.).

Variety	Source	Intended Use	Days	Percent Sieve Size[z]					Tons/Acre Sieve Size						$/Acre[w]
				2[y]	3	4	5	6	2	3	4	5	6	Graded Total[x]	
EX 378	Seminis	4-5 sieve	61	8	36	44	12	0	0.54	2.43	3.01	0.83	0.00	6.82	1538
			63	5	22	38	33	1	0.35	1.67	2.86	2.47	0.11	7.46	1460
			64	4	18	40	37	1	0.27	1.34	2.97	2.79	0.11	7.49	1423
WB-22	Pureline	3-4 sieve	58	15	59	26	1	0	0.57	2.25	0.98	0.04	0.00	3.83	923
			61	10	46	39	6	0	0.57	2.72	2.28	0.33	0.00	5.90	1384
			63	7	38	42	13	0	0.44	2.54	2.83	0.87	0.00	6.67	1498
Proton	Pureline	2 sieve	62	84	16	0	0	0	3.94	0.76	0.00	0.00	0.00	4.70	1138
			64	64	36	0	0	0	3.43	1.96	0.00	0.00	0.00	5.38	1303
			66	56	44	0	0	0	3.37	2.61	0.00	0.00	0.00	5.98	1447
Safari	Pureline	2 sieve	64	99	1	0	0	0	3.67	0.04	0.00	0.00	0.00	3.71	897
			66	97	3	0	0	0	4.08	0.11	0.00	0.00	0.00	4.19	1013
			68	97	3	0	0	0	4.19	0.11	0.00	0.00	0.00	4.30	1040
Minuette	Harris Moran	3-4 sieve	61	29	66	4	1	0	1.17	2.65	0.18	0.04	0.00	4.03	971
			63	9	67	23	1	0	0.46	3.26	1.12	0.04	0.00	4.88	1177
			65	6	50	42	1	0	0.41	3.26	2.76	0.07	0.00	6.50	1563
5600	OSU	3 sieve	61	62	38	0	0	0	1.90	1.16	0.00	0.00	0.00	3.06	741
			64	20	75	4	0	0	1.17	4.35	0.25	0.00	0.00	5.77	1397
			66	16	66	18	0	0	0.95	3.88	1.05	0.00	0.00	5.88	1423
5613	OSU	3 sieve	61	54	46	0	0	0	1.98	1.67	0.00	0.00	0.00	3.65	884
			63	24	72	3	1	0	1.44	4.35	0.18	0.07	0.00	6.04	1453
			65	17	78	3	1	0	1.20	5.37	0.22	0.07	0.00	6.85	1648

[z]Percent calculated as % of total of 2-5 sieve beans.
[y]2 sieve values calculated as 75% of the combined 1 + 2 sieve weights from grader.
[x]Total weight of graded beans, including sieve sizes 2-5. Values will be lower than those reported in Table 9 because some beans are lost in the grading process.
[w]$/acre based on $242/ton for 2-4 sieve; $108/ton for 5 sieve.

Table 9. Statistical comparison of yields and dollar return of commercial green bean lines, Corvallis, 1997.[z]

Variety	Intended Use	T/A Unadjusted	T/A Adjusted[y]	$/A
91G	full sieve	9.2	9.6	1655
Ore. 54	full sieve	9.8	9.9	1712
5416	full sieve	9.8	10.0	1730
5630	full sieve	10.3	10.9	1863
5635	full sieve	8.2	9.1	1552
5651	4-5 sieve	9.3	9.5	1646
Gold Rush	4 sieve	7.5	7.5	1772
Minidor	3 sieve	7.3	7.3	1758
Primera	2 sieve	7.0	7.0	1684
Salou	4-5 sieve	5.5	6.4	1081
Cantare	3 sieve	5.7	5.7	1369
Highway	4 sieve	7.0	7.0	1633
Scuba	4 sieve	7.1	7.1	1621
SB4123	3 sieve	7.3	7.3	1763
SB4124	full sieve	10.5	9.8	1728
EX 390	3 sieve	5.5	5.5	1333
EX 377	4 sieve	7.7	7.7	1759
EX 371	full sieve	8.2	8.5	1468
EX 378	4-5 sieve	7.9	9.1	1775
WB-22	3-4 sieve	6.4	6.4	1505
Proton	2 sieve	6.9	6.9	1667
Safari	2 sieve	5.9	5.9	1421
Minuette	3-4 sieve	6.8	6.8	1630
5600	3 sieve	7.0	7.0	1693
5613	3 sieve	7.1	7.1	1718
LSD @ 5%		1.7	1.8	367

[z]Based on one selected harvest for each variety, 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 2-6 sieve beans.

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

Table 10. Fusarium root rot infection, Corvallis, 1997.

Line	Score[z]			Notes
	Rep 1	Rep 2	Avg.	
91G	3.5	4.0	3.75	
Oregon 54	3.0	4.0	3.5	
5163	3.5	4.0	3.75	
5416	3.5	3.0	3.25	
5446	4.0	4.0	4.0	
5520	4.0	3.0	3.5	
5566	3.5	3.5	3.5	
5575	2.5	3.0	2.75	
5600	3.5	3.5	3.5	
5613	3.5	3.5	3.5	
5620	3.5	3.5	3.5	
5630	3.5	4.5	4.0	
5635	4.5	4.0	4.25	
5643	4.0	3.5	3.75	
5651	3.0	3.0	3.0	
5669	3.0	3.5	3.25	
5681	3.5	3.5	3.5	
5698	3.5	3.5	3.5	
5701	3.5	3.5	3.5	
5712	3.5	4.0	3.75	
5713	2.5	3.5	3.0	
5714	3.5	3.5	3.5	
5747	2.5	3.5	3.0	
B7030-24	2.5	2.0	2.25	late
B7126-1-1-1	2.5	2.0	2.25	late
B7126-33-1-2	2.5	3.5	3.0	
B7126-33-2-1	2.5	3.0	2.75	
B7126-54-2-1	2.5	3.0	2.75	late
B7237-1-3	3.5	3.5	3.5	early

Table 10. Fusarium root rot infection, Corvallis, 1997 (cont.).

Line	Score[z]			Notes
	Rep 1	Rep 2	Avg.	
B7237-11-3	3.0	2.5	2.75	
B7237-13	3.0	3.0	3.0	
B7237-14-3	4.0	4.5	4.25	early
B7237-14-4	4.0	3.5	3.75	
B7238-15	3.0	4.5	3.75	
B7238-22	3.0	3.0	3.0	early
B7239-4	3.0	4.0	3.5	
B7239-5-1	3.5	4.0	3.75	
B7239-5-2	2.5	2.5	2.5	
B7239-5-4	3.0	3.0	3.0	
B7239-11-1	4.5	3.0	3.75	
B7239-11-2	3.5	4.0	3.75	
B7239-11-3	3.0	3.0	3.0	late, small plant
B7240-2	2.5	2.5	2.5	late
Minuette	2.0	3.0	2.5	
76-110	3.0	3.0	3.0	
Wisc 46RR	3.0	2.5	2.75	
Wisc 83RR	1.5	1.5	1.5	
RR 6950	1.0	1.0	1.0	
RR 4270	2.5	2.5	2.5	
DM 3NY1	3.0	2.0	2.5	
DM 4NY6	3.0	3.5	3.25	
DM 6NY1	2.5	2.5	2.5	
FR 266	1.5	1.5	1.5	had a lot of space
NY 5517	4.0	3.5	3.75	
NY 5525	3.0	3.0	3.0	early
NY 5554	3.0	3.0	3.0	early

[z]Scores: 1-5 scale, 1 = no or very slight surface infection, 5 = roots mostly dead, plants severely stunted.

Table 11. White mold infection, Corvallis, 1997.[z]

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
91G	4	8	5	4	5.25
Ore. 54	2	7	7	2	4.5
5163	5	3	4	4	4.0
5416	5	7		2	4.7
5446	2	3	8	1	3.5
5520	4	6	6	6	5.5
5566	4	9	4	4	5.25
5575	4	2	4	3	3.25
5600	3	3	3	4	3.25
5613	2	7	3	3	3.75
5620	1	1	3	2	1.75
5630	4	5	6	1	4.0
5635	2	7	7	4	5.0
5643	2	7	3	4	4.0
5651	4	9	7	1	5.25
5669	3	5	4	2	3.5
5681	1	3	5	3	3.0
5698	2	5	3	2	3.0
5701	1	5	4	1	2.75
5712	3	3	4	1	2.75
5713	4	1	3	4	3.0
5714	3	4	1	3	2.75
5747	2	3	6	2	3.25
B7030-24	5	8	5	7	6.25
B7126-1-1-1	4	4	5	3	4.0
B7126-33-1-2	4	5	3	3	3.75

Table 11. White mold infection, Corvallis, 1997 (cont.).[z]

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
B7126-33-2-1	7	4	9	6	6.5
B7126-54-2-1	4	2	2	4	3.0
B7237-1-3	3	2	2	3	2.5
B7237-11-3	2	3	3	8	4.0
B7237-13	5	1	2	2	2.5
B7237-14-3	1	2	1	2	1.5
B7237-14-4	2	2	3	3	2.5
B7238-15	2	3	2	3	2.5
B7238-22	1	3	2	1	1.75
B7239-4	3	4	3	4	3.5
B7239-5-1	3	2	2	1	2.0
B7239-5-2	6			2	4.0
B7239-5-4	2	5	5	3	3.75
B7239-11-1	2	4	1	2	2.25
B7239-11-2	2	2	5	3	3.0
B7239-11-3	4	3	1	3	2.75
B7240-2	5	7	7	7	6.5
B7315-10-1-3-1	1	3	3	2	2.25
B7318-2-1-1-1	2	1	1	1	1.25
B7318-2-2-2-1	1	1	2	3	1.75
B7320-2-1-2-1	3	4	4	3	3.5
B7321-5-1-2-1	1	6	2	2	2.75
B7321-5-2-1-1	2	4	2	3	2.75
B7321-5-2-1-2	3	1	2	1	1.75
B7321-5-2-2-1	2	2	2	2	2.0
B7322-2-3-2-1	4	4	1	2	2.75

Table 11. White mold infection, Corvallis, 1997 (cont.).[z]

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
B7322-2-3-2-2	2	3	2	1	2.0
B7323-4-1-1-1	1	1	2	2	1.5
B7323-4-1-1-2	2	1	2	2	1.75
B7323-4-1-2-1	3	1	2	1	1.75
B7323-5-2-1-1	1	1	1	1	1.0
B7324-2-2-1-1	1	2	1	1	1.25
B7324-3-2-2-1	1	1	1	1	1.0
B7326-1-1-1-2	2	2	2	3	2.25
B7329-1-1-1-1	3	1	1	1	1.5
B7329-1-2-2-1	3	4	2	1	2.5
B7329-1-2-2-2	2	1	2	2	1.75
B7329-2-1-2-1	2	1	1	1	1.25
B7329-2-1-2-2	1	1	1	1	1.0
B7329-4-1-2-1	2	2	2	1	1.75
B7329-4-2-1-1	2	1	1	2	1.5
B7329-5-2-1-1	2	4	2	1	2.25
B7329-5-3-2-1	3	4	1	1	2.25
B7329-5-4-1	3	2	1	3	2.25
B7329-11-1-1-1	2	1	2	2	1.75
B7329-11-1-2-1	4	1	3	1	2.25
B7329-11-2-1	1	3	3	2	2.25
B7330-1-2-2-1	2	7	5	1	3.75
B7334-13-2-1	1	2	1	1	1.25
B7335-7-1-1-1	1	1	2	1	1.25
B7335-7-1-1-2	1	2	3	1	1.75
B7335-7-1-2-1	1	1	1	1	1.0

Table 11. White mold infection, Corvallis, 1997 (cont.).[z]

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
B7335-7-2-1-1	1	1	2	2	1.5
B7335-7-2-2-1	3	2	2	1	2.0
B7335-7-2-2-2	2	2	1	3	2.0
B7335-9-1-2-1	5	2	4	2	3.25
B7339-1-1-1-2	1	2	1	1	1.25
B7339-1-1-2-1	1	3	1	1	1.5
B7339-1-2-2-1	1	2	2	1	1.5
B7339-1-2-2-2	1	2	1	1	1.25
B7342-4-1-1-1	2	1	2	2	1.75
B7344-4-2-1	2	2	2	1	1.75
B7344-5-1-1	1	1	2	1	1.25
B7344-9-2-2-1	1	1	1	1	1.0
B7345-5-1-1-1	1	1	2	2	1.5
B7345-5-1-2-1	4	3	2	1	2.5
B7346-4-2-1	5	2	2	2	2.75
B7348-7-1-2-1	2	2	2	1	1.75
B7351-1-3-1-1	3	3	3	5	3.5
B7351-1-3-2-1	4	3	4	4	3.75
B7354-1-2-1-1	1	1	2	1	1.25
B7354-2-1-1-1	1	1	1	1	1.0
B7354-2-2-1-2	2	2	4	3	2.75
B7354-2-2-2-1	1	2	1	1	1.25
B7354-6-2-1	1	1	1	1	1.0
B7354-6-2-2	1	1	1	1	1.0
B7356-4-1-1	2	1	1	2	1.5
B7356-4-2-1	2	2	2	2	2.0

Table 11. White mold infection, Corvallis, 1997 (cont.).[z]

Line	Rep 1	Rep 2	Rep 3	Rep 4	Avg.
2235	4	4	3	3	3.5
3525	1	1	8	3	3.25
76-110	3	3	4	4	3.5
Minuette	2	5	4	3	3.5
Aurora	5	5	8	3	5.25
Black Turtle	2	8	8	1	4.75
Black Valentine	4	3	7	3	4.25
Ex Rico	2	2	5	4	3.25
Gabriella	3	3	3	2	2.75
L192	1	2	1	2	1.5
MO 162	1	1	1	1	1.0
Tender Crop	8	7	6	1	5.5
169787	1	3	2	4	2.5
180753	1	3	3	1	2.0
204717	1	2	2	4	2.25
225846	1	1	2	1	1.25
226865	5	2	1	1	2.25
824775	2	1	2	3	2.0
DM3NY1	6	5	4	3	4.5
DM4NY6	1	7	5	4	4.25
DM6NY1	8	7	6	6	6.75
NY1-5984-1	1	3	3	2	2.25
NY1-6020-5	2	2	1	2	1.75
NY2-6005-1	3	5	7	1	4.0
NY5773	3	1	7	2	3.25
NY5950	4	3	2	1	2.5

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

Figure 1. Standard Bean $/A 1997 - May 2 Planting

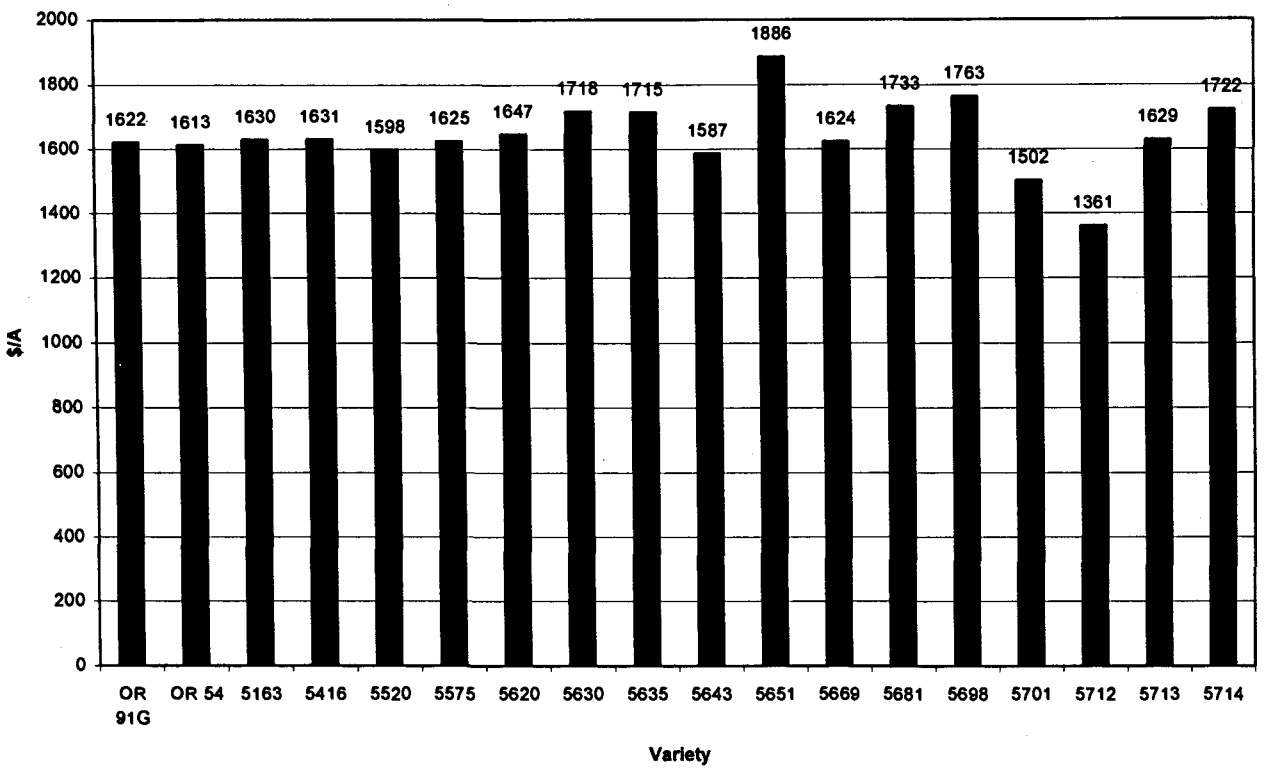

Figure 2 Standard Bean $/A 1997 - May 14 Planting

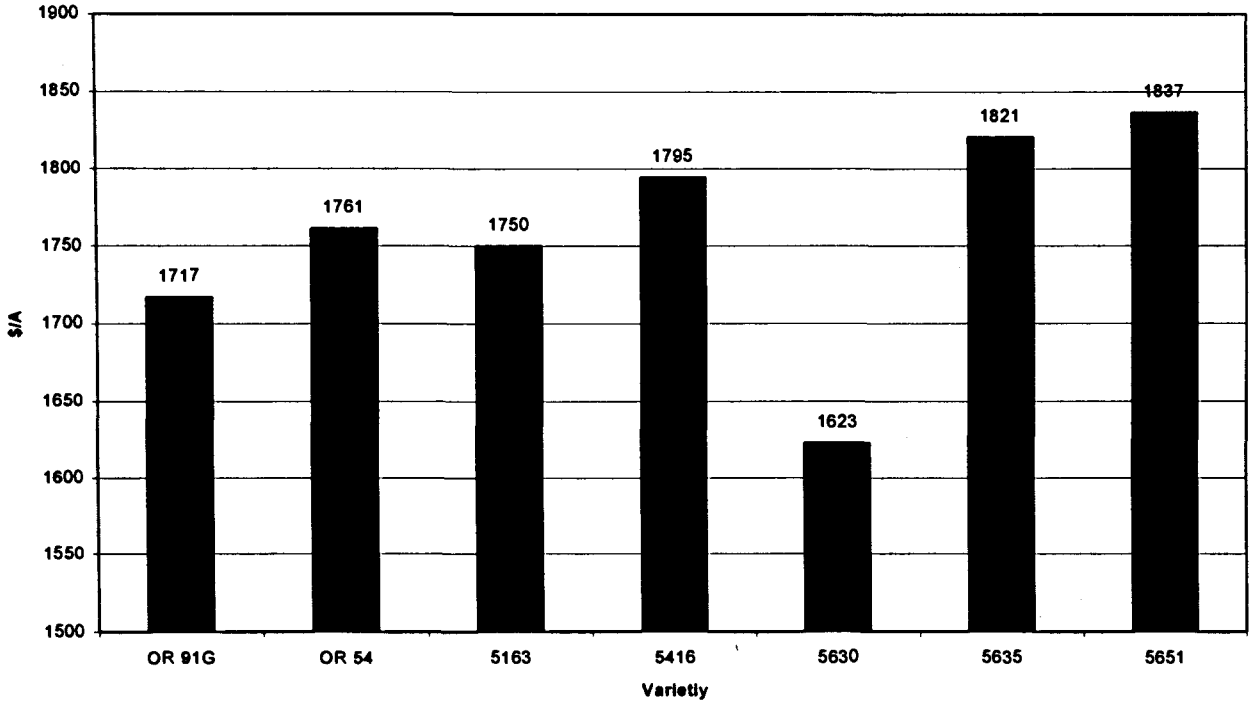

Figure 3 Standard Bean $/A 1997 - May 27 Planting

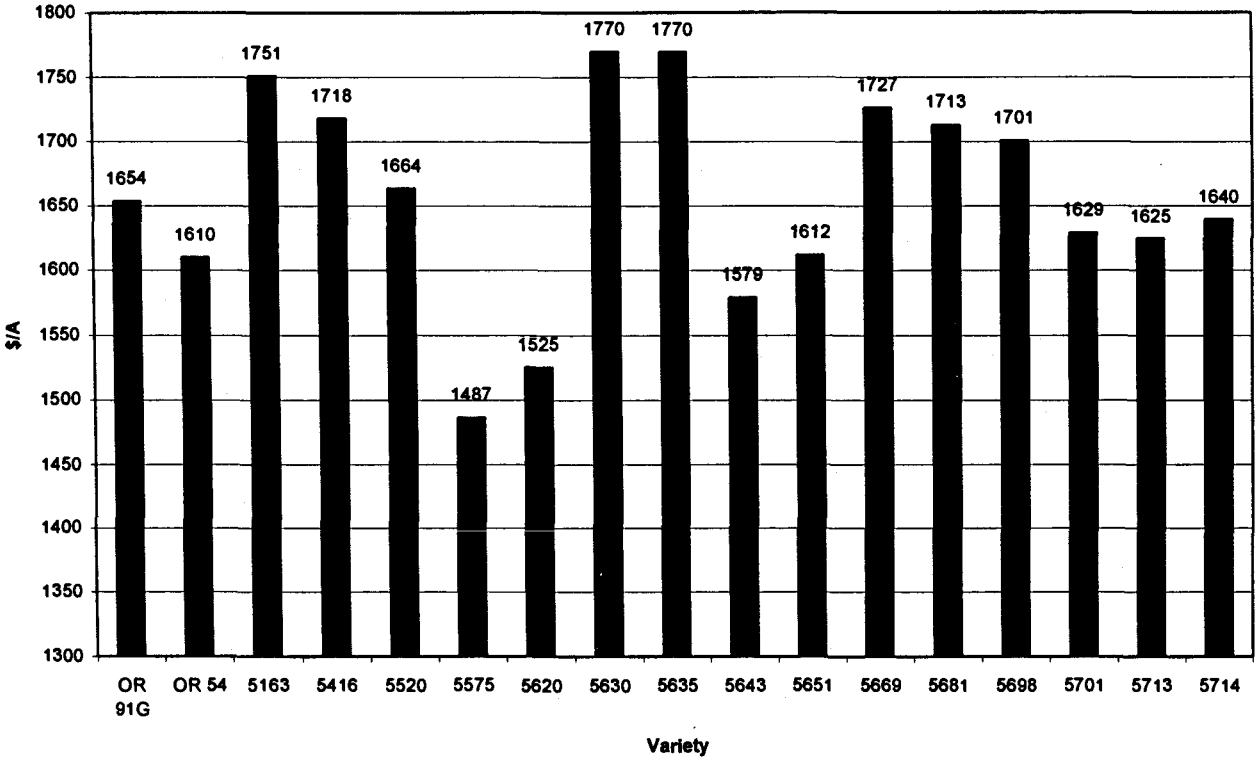

Figure 4 Standard Bean $/A 1997 - June 25 Planting

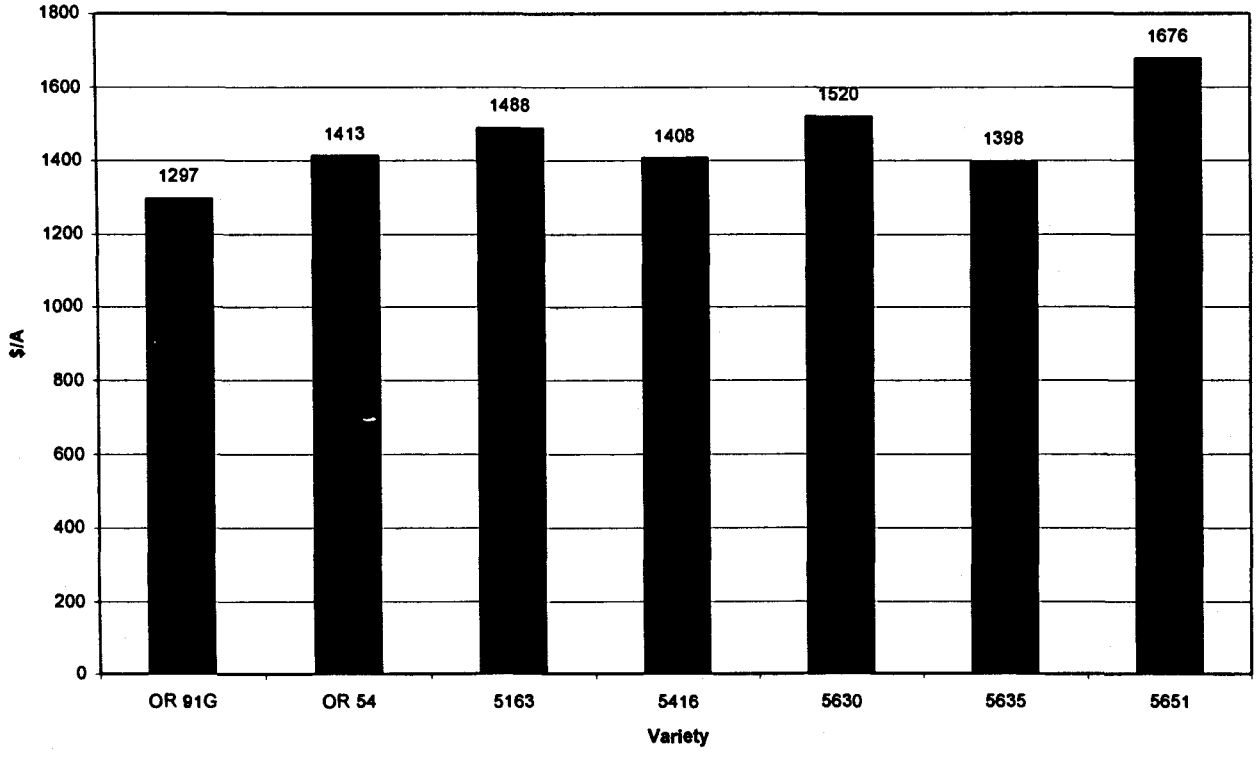

Figure 5. Standard Beans $/A 1997 Season Average - Selected Harvests

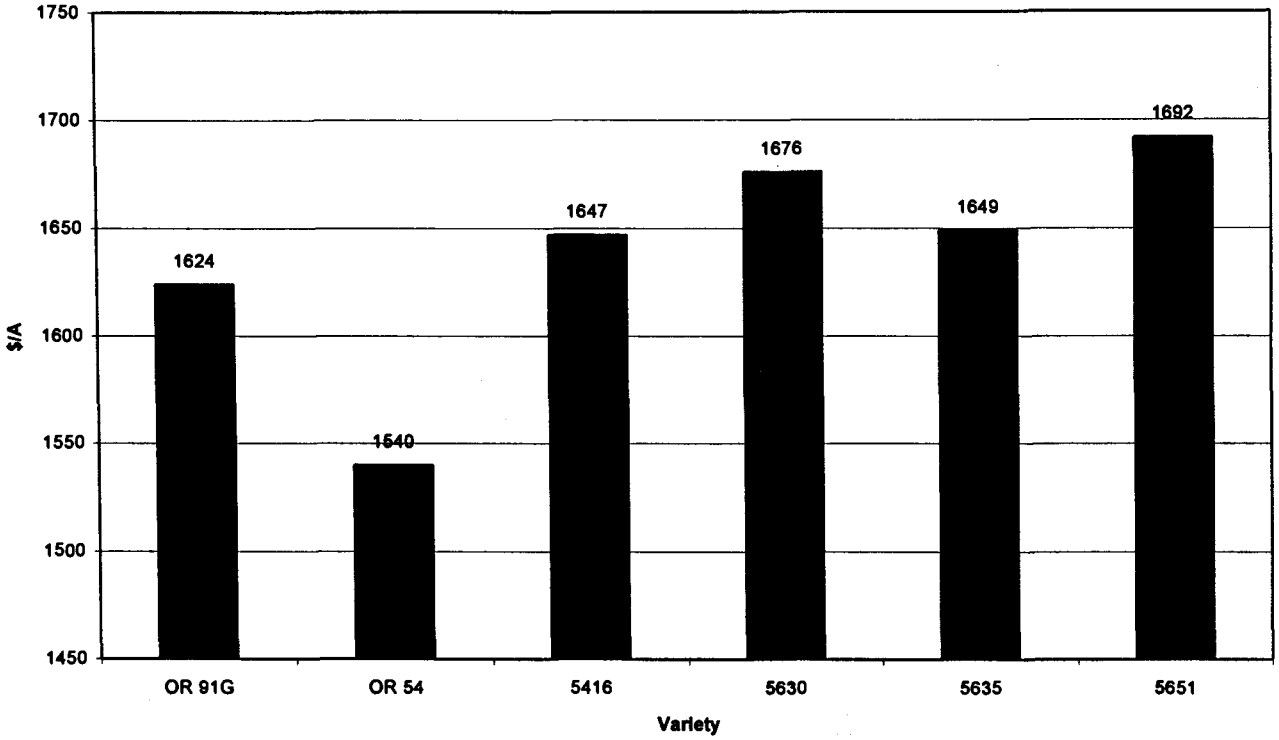

Figure 6. Commercial Beans $/A 1997 - 5 and 6 sieve varieties

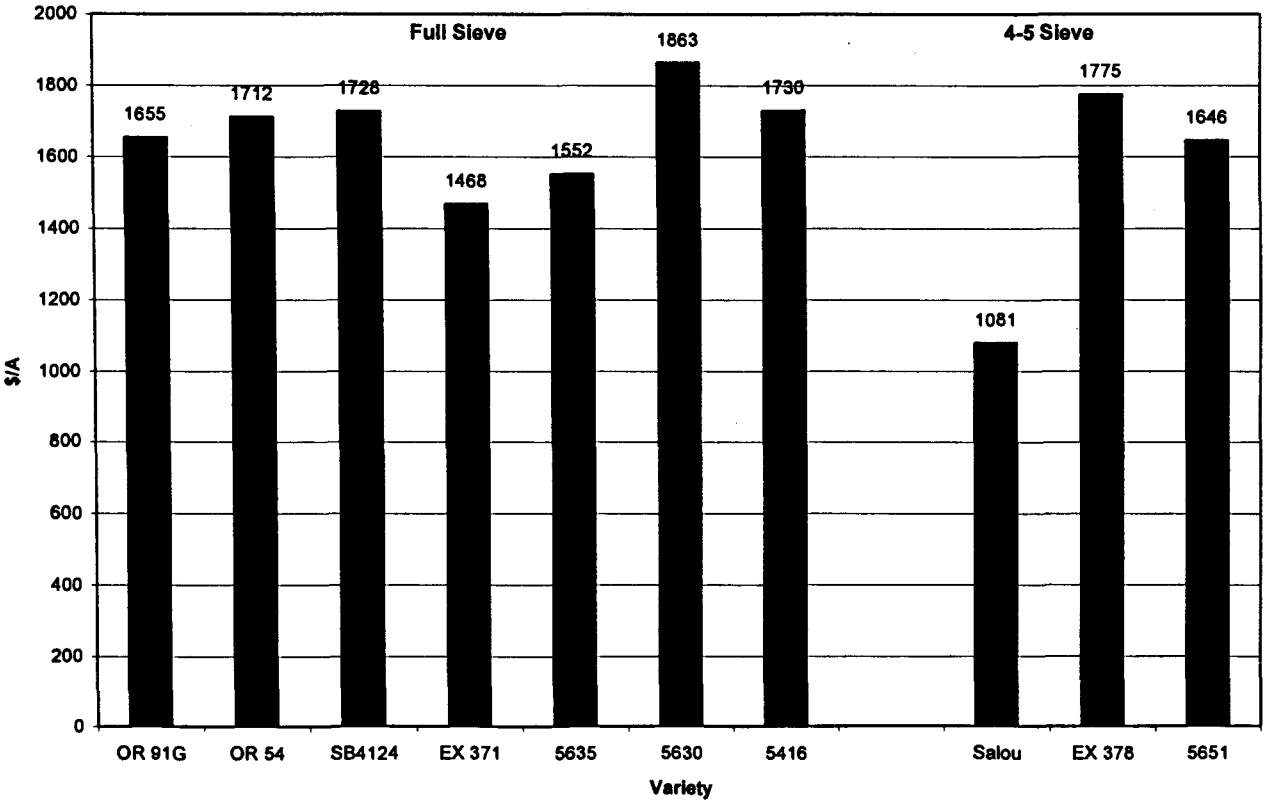

Figure 7. Commerical Beans $/A 1997 - 2-4 sieve varieties

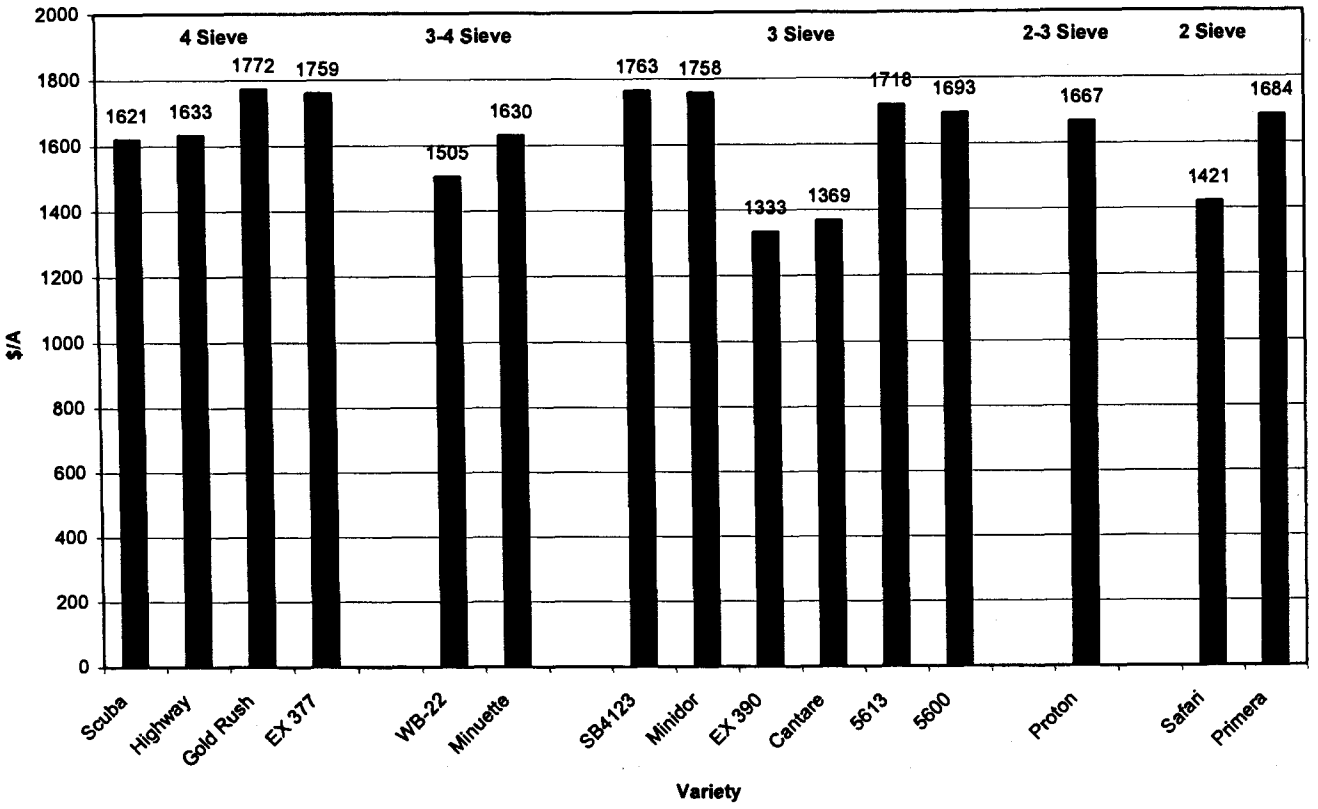

Figure 8. Small Sieve Beans $/A 1997 - Trials 1-5 and 1997 Average