Report to the Oregon Processed Vegetable Commission
2005–2006

1. Title: Green Bean Breeding and Evaluation

2. Project Leaders: James R. Myers, Horticulture

3. Cooperator: Brian Yorgey, Food Science and Technology

4. Project Status: Terminating 30 June, 2006

5. Project Funding: $61,970 breeding

   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.

6. Objectives:

   1. Breed Bush Blue Lake green bean varieties with high economic yield and improved plant architecture.

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

   3. Incorporate white mold resistance and improve root rot tolerance.

   4. Develop a molecular marker map to facilitate marker-assisted selection of desirable horticultural traits.

7. Report of Progress:

Varietal Development: The program continued with crosses among elite lines and commercial cultivars of green bean for varietal development. Early generations for most recent crosses were advanced in a winter nursery at Indio, California in January-May, 2005. We are focusing on crosses to sources of white mold resistance. Additional selections from OSU x OSU crosses were advanced and increased for replicated trials. Advanced lines were screened in replicated root rot and white mold field nurseries. Seed increase, roguing, and sub-line maintenance of the most promising lines was continued.

Yield Trials: With the added emphasis on developing white mold resistant green bean varieties, we cut back on the number of yield trials conducted in 2005. Two preliminary trials were planted (June 2 and 16), and a commercial yield trial funded by seed companies was grown (planted June 30). Entries grown in the preliminary trials were not

processed for evaluation, however, processing evaluation was done on those commercial trial entries paid for by sponsoring seed companies.

The June 2 preliminary trial received 1.4 inches of rain over a four day period beginning three days after planting. Emergence of entries in this trial was delayed and greatly reduced. As a result, we chose not to harvest this trial for yield and processing evaluation, but did take notes on growth habit, overall desirability of breeding lines, and notes on heat stress (Table 1). OSU 5630 and three Minuette cross lines (OSU 6174, OSU 6185 and OSU 6189) were among the best performers of advanced lines. Several preliminary lines with potential white mold resistance (OSU 6318, OSU 6345, OSU 6383, OSU 6384, OSU 6393 and OSU 6395) appeared resistant to the germination and heat stress observed in this trial.

In the June 16 trial 64 experimental lines and four checks of all sieve sizes were grown (Tables 2-5). Some heat stress was encountered in this trial as well, but was not as severe as the first trial. Among experimental lines, OSU 6137 had a remarkable yield of 13.7 T/A (adjusted yield), especially when compared to 4.2 and 7.8 T/A for Oregon 91G and Oregon 54, respectively. Because of its vigor, it would be suitable for production on low fertility ground, but might have a mold problem on high fertility ground. OSU 6137 is from the cross Minuette x 91G, and has a vigorous upright bush that support dark green blue lake type pods. Other Minuette derived crosses of interest are OSU 6185 and OSU 6189. Much of the white mold derived cross material tested in trials had limited processing quality, with some lines still segregating for strings and pod shape. Among the best lines in both pod appearance and yield were OSU 6300, OSU 6323 and OSU 6330 (Tables 2 & 4). Three Minuette-derived small sieve experimental lines (OSU 6127, OSU 6130, and OSU 6174) had relatively good yields, good pod quality characteristics, and little evidence of heat stress (Tables 3 & 5). None of the white mold resistant derived small sieve lines were particularly notable.

Commercial Green Bean Trial: The commercial trial consisted of 17 varieties received from four seed companies, four check varieties and two OSU experimental lines (Table 6). Planted June 30, the trial grew under near ideal conditions as exhibited by the 11 T/A yields obtained for Oregon 91G and Oregon 54 (Tables 6 & 7 , Figures 1 & 2). Both OSU 5630 and OSU 5669 achieved 12 T/A yields in this trial. Top yielder in this trial was the Syngenta line SB 4286 with 14.6 T/A. Both this line and SB 4285 are very close to a bush blue lake (BBL) type. Seminis lines are very uniform, attractive in appearance, and generally high yielding, but are not of a BBL type (Tables 6-8). One Romano type (118) was evaluated in this trial (Tables 7-8). While not tested directly against a Romano check, it was high yielding, with better plant habit than most Romano types and acceptable pod quality.

Root rot trial: Approximately 250 lines, including checks were grown in a root rot trial at the Vegetable Research Farm. Material could be divided into three groups: B 7730 series lines that are BBL crosses to FR 266 (a root rot resistant kidney breeding line), GF series (a recombinant inbred line [RIL] population developed from the cross Goldcrop by FR266), and the GW series (RIL population from the cross Goldcrop x Wis 46 RR). The GW and GF populations are being used to map quantitative trait loci associated with re-

sistance to root rot. The B7730 series lines are being used to develop breeding lines with improved resistance. The lines B7732-41, B7733-29, B7739-17 and B7739-have offer potential for improved resistance, but generally are not of a horticultural type.

Breeding for White and Gray Mold Resistance: A white mold trial was grown at the Vegetable Research Farm. Because of the warm dry late summer and fall, infection was late in appearance, but sufficient disease was observed that allowed separation of resistant and susceptible lines. Several common bean lines have been identified that have partial resistance to white mold. These include several OSU BBL breeding lines (none are acceptable processing types), G 122, a cranberry bean, NY 6020-5, a snap bean line, and Ascher DR, a dark red kidney bean line. These have been crossed with elite BBL lines using the backcross-inbred method to recover resistance in an acceptable plant type. Some lines have been tested for white mold resistance in 2003 - 2005. Some lines have been in preliminary yield trials for two years as well (see description of yield trials above). Among our breeding materials that are equivalent in resistance to G 122 are OSU 6229, 6230, 6236, 6238, 6239, 6256, and 6267 (Table 10). While none have been grown in long term trials (Table 11), some (OSU 6229, 6230, 6239, and 6256) have two years data, and show a similar response between years (Table 12). White mold incidence and growth habit were negatively correlated in the 2005 trial, indicating that architectural type probably influenced microenvironment and thereby severity of white mold infection (Table 13).

Transfer of resistance from Phaseolus coccineus *to* P. vulgaris: The best source of resistance to white mold resides in the related bean species, *P. coccineus* or scarlet runner bean. We have been developing backcross-inbred populations as a means of transferring resistance while regaining the snap bean type as rapidly as possible. We are furthest along with the cross 91G x PI 255956. It was tested in the BC_2F_2 using the straw test prior to planting this year, was tested in the field in the BC_2F_4 this past summer, and has been tested again with the straw test in the fall 2005 greenhouse in the BC_2F_5 generation. In all cases, the population shows a near-normal distribution (Tables 14-16, Figures 3 & 4). In the most advanced materials, we were able to show that a few of the lines in this population have equal to, or significantly better resistance than G 122 (Figure 3). In the field trial, we observed a significant negative correlation between disease incidence and growth habit, while yield and growth habit were positively correlated (Table 17). Next step with the interspecific populations is to construct a molecular linkage map and map genes for resistance.

Marker Assisted Selection for White Mold Resistance: Molecular markers associated with resistance in NY 6020 and G 122 have been derived. Several of our lines are derived from crosses to NY 6020, and were screened for the presence of markers associated with resistance (Table 18). In most cases, lines that possessed the marker also were partially resistant to white mold. OSU 6267 and 6268 were two exceptions where the markers were present, but lines were variable, or not resistant. Overall, it appears that markers will be useful for incorporation of resistance from the NY 6020 background. In addition, we have been backcrossing the G 122 source of resistance into 91G using the linked markers *pha* and seed coat color. 91G has S phaseolin and is white seeded whereas G 122 has T phaseolin and has colored seed. We are selecting for 91G type plants with T

phaseolin and white seed, but to date, do not have lines that are white mold resistant with these combination of characters. It may be that due to a lack of recombination between white seed and the resistance gene that we are not yet able to transfer resistance, and will require larger population sizes to obtain the desired recombinants.

Advanced Lines: We are continuing with plans for release of OSU 5630 BBL variety.

8. Summary:

Greater emphasis was place on breeding for white mold resistance in 2005. As such, fewer yield trials were conducted, and processing evaluation supported by OPVC was not done. One preliminary trial with 68 lines was evaluated for yield and processing characters, and a commercial trial with 23 entries was conducted. In addition to the white mold resistance breeding effort, about 250 lines were screened for root rot resistance. White mold evaluations consisted of greenhouse straw tests of many breeding lines, field evaluation of advanced breeding lines, the development of interspecific populations for additional sources of resistance. In addition, marker assisted selection was used to verify that a resistance gene from NY 6020 has been transferred into BBL breeding lines. To date, we have identified some lines that are fairly close to a BBL type with partial resistance to white mold, but additional refinement is required.

Table 1. Field notes from a preliminary bean trial, June 2 planting, Corvallis, Oregon, 2005[z]

Line	Est. Sieve Size	Ht:Wd[y]	Overall Score[x]	Notes
91G	full	0.5	5	
OR 54	full	0.5	5	
5613	3	1.0	5	
5630	full	0.9	7	
5669	full	0.5	5	good yield
6127	4	1.0	3	poor yield
6130	4	1.0	5	
6137	5	1.0	1	heat stress
6142	4	1.0	3	short pods
6150	4-5	1.2	1	heat stress
6157	4-5	1.0	5	dark green
6174	4-5	1.4	7	
6175	5	1.0	5	
6185	full	1.4	7	dark green
6189	full	1.2	7	good color
6204	4	1.0	3	oval; light color
6229	full	0.9	5	
6230	full	1.0	5	extremely long pods; color too light
6231	full	1.3	1	oval; heat stress
6232	full	1.2	1	oval; light color
6235	4	0.5	1	very poor habit
6239	full	0.8	5	
6241	5	0.5	5	
6258	flat pod	1.3	1	flat pod; purple flowers; stiff upright habit
6265	full	1.5	1	oval; very poor yield
6267	4-5	0.7	3	very poor yield
6268	4	0.6	1	oval
6269	4	1.0	1	heat stress
6270	4	0.7	5	
6271	3-4	1.1	5	
6275	5	1.0	3	poor yield
6279	full	1.2	5	
6280	full	0.5	5	
6283	5	0.8	1	stringy
6284	full	1.0	5	
6286	5	0.5	5	
6287	4	1.1	5	
6288	5	1.0	1	bad split set
6290	5	1.0	5	
6294	5	1.1	6	
6295	full	1.0	1	poor yield
6296	full	1.2	5	
6300	full	1.2	6	
6303	5	0.5	3	heat stress
6313	full	1.1	5	
6315	full	1.0	5	short pods

Table 1. Field notes from a preliminary bean trial, June 2 planting, Corvallis, Oregon, 2005 (cont.)[z]

Line	Est. Sieve Size	Ht:Wd[y]	Overall Score[x]	Notes
6318	full	1.1	7	
6320	5	0.5	3	short pods; very poor yield
6323	full	0.6	5	
6327	full	1.3	7	
6329	full	0.6	5	good yield
6330	full	1.1	5	
6335	full	0.8	5	
6337	full	0.9	3	
6338	5	1	5	
6339	5	1	5	
6340	5	1	3	poor yield
6342	5	1	5	
6345	5	1.2	7	
6346	5	1	5	
6347	5	1.2	5	
6348	4	0.8	6	good yield
6363	5	1	5	
6372	4-5	1	3	heat stress
6375	4	0.6	3	poor yield
6383	4	1.4	7	
6384	4	0.9	7	
6393	4	1	7	good yield
6395	4	0.7	7	
Minuette	4	1.2	1	heat stress
Savannah	4	1.2	3	heat stress

[z]This trial was not harvested for yield because stands were very poor due to excessive rain for two weeks after planting.
[y]Ht:Wd: ratio of plant height to plant width; <1 = plants wider than tall; 1 = height and width equal; >1 = plants taller than wide.
[x]Scores based on a 1-9 scale with 9 = best.

Table 2. Performance of preliminary full sieve green bean lines, June 16 planting, Corvallis, 2005.[z]

Line	Days to Harvest	Est. Sieve Size	Percent Sieve Size[y] 1	2	3	4	5	6	%1-4 Sieve	Av Tons/Acre	Av Adj Tons/Acre[x]
91G	57	full	8.3	4.2	8.3	20.8	27.1	31.3	41.7	4.2	3.8
OR 54	57	full	5.5	8.8	17.6	35.2	28.6	4.4	67.0	7.8	9.2
5630	57	full	7.1	9.1	12.1	43.4	27.3	1.0	71.7	8.9	10.8
5669	57	full	3.3	5.5	11.0	29.7	44.0	6.6	49.5	8.5	8.5
6137	60	5	2.6	3.9	10.5	32.2	40.8	9.9	49.3	13.8	13.7
6175	61	5	14.8	14.8	17.3	34.6	16.0	2.5	81.5	7.7	10.1
6185	57	full	9.1	9.1	15.2	21.2	21.2	24.2	54.5	5.7	6.0
6189	57	full	4.0	9.0	10.0	20.0	32.0	25.0	43.0	9.2	8.6
6229	60	full	8.3	5.6	5.6	27.8	38.9	13.9	47.2	4.0	3.9
6230	57	full	4.8	3.2	6.3	23.8	36.5	25.4	38.1	5.7	5.1
6231	60	full	8.5	10.6	10.6	17.0	23.4	29.8	46.8	4.2	4.1
6232	57	full	2.8	5.6	8.3	25.0	38.9	19.4	41.7	3.7	3.4
6239	60	full	9.5	16.7	11.9	23.8	16.7	21.4	61.9	3.9	4.4
6241	57	5	4.0	10.0	14.0	30.0	30.0	12.0	58.0	4.6	5.0
6258	57	flat pod								6.2	6.2
6265	60	full	5.6	5.6	5.6	20.4	40.7	22.2	37.0	5.0	4.3
6275	57	5	5.3	9.3	9.3	21.3	25.3	29.3	45.3	7.1	6.8
6279	57	full	2.2	4.4	11.1	27.8	33.3	21.1	45.6	8.1	7.8
6280	60	full	4.2	6.3	10.4	27.1	37.5	14.6	47.9	8.8	8.6
6283	58	5	6.0	7.7	17.1	37.6	26.5	5.1	68.4	11.0	13.0
6284	57	full	7.4	8.8	17.6	38.2	26.5	1.5	72.1	6.3	7.6
6288	61	5	17.6	11.8	15.7	19.6	21.6	13.7	64.7	4.6	5.3
6290	57	5	7.9	7.9	13.9	28.7	30.7	10.9	58.4	8.9	9.6
6294	60	5	5.4	4.5	7.2	22.5	41.4	18.9	39.6	10.0	9.0
6295	57	full	8.5	15.3	18.6	33.9	20.3	3.4	76.3	5.6	7.0
6296	60	full	8.5	9.8	15.9	34.1	20.7	11.0	68.3	7.1	8.4
6300	56	full	6.6	9.2	13.2	23.7	35.5	11.8	52.6	7.0	7.3
6303	57	5	5.9	11.8	16.2	26.5	27.9	11.8	60.3	6.3	6.9
6313	57	full	6.0	9.5	13.1	28.6	34.5	8.3	57.1	8.1	8.7
6315	57	full	4.0	6.7	13.3	29.3	34.7	12.0	53.3	6.9	7.1
6318	58	full	5.5	7.7	15.4	34.1	31.9	5.5	62.6	8.4	9.4
6320	56	5	4.1	4.1	8.2	22.4	40.8	20.4	38.8	5.0	4.2
6323	56	full	3.4	8.0	10.3	29.9	37.9	10.3	51.7	8.6	8.8
6329	56	full	4.3	4.3	12.0	40.2	33.7	5.4	60.9	8.6	9.6
6330	56	full	5.8	5.8	11.5	28.8	34.6	13.5	51.9	5.0	5.1
6335	57	full	1.5	4.5	10.6	28.8	34.8	19.7	45.5	6.6	6.3
6337	57	full	4.2	8.5	12.7	26.8	29.6	18.3	52.1	6.4	6.6
6338	56	5	5.1	5.1	11.1	31.3	40.4	7.1	52.5	9.0	9.3
6339	57	5	2.0	4.0	8.0	27.0	44.0	15.0	41.0	8.9	8.1
6340	57	5	3.8	8.8	11.3	30.0	35.0	11.3	53.8	7.1	7.4
6342	56	5	3.4	6.9	10.3	35.6	37.9	5.7	56.3	8.3	8.8
6345	56	5	3.8	6.3	12.5	43.8	28.8	5.0	66.3	7.1	8.3
6346	56	5	3.6	4.8	12.0	39.8	34.9	4.8	60.2	7.3	8.0
6347	57	5	3.0	5.9	9.9	32.7	37.6	10.9	51.5	9.3	9.5
6363	57	5	5.9	7.8	13.7	25.5	33.3	13.7	52.9	4.6	4.7
LSD@5%										2.6	2.9

[z]Mean of 2 replications; subplots of 5' were harvested from single 20' plots in rows 30" apart. [y]Percent calculated as % of total of 1-6 sieve beans. [x]Tons/Acre adjusted to 50% 1-4 sieve.

Table 3. Performance of preliminary small sieve green bean lines, June 16 planting, Corvallis, 2005.[z]

Line	Days to Harvest	Est. Sieve Size	Percent Sieve Size[y] 1	2	3	4	5	6	%1-4 sieve	Av tons/acre
5613	57	3	13.2	24.5	35.8	26.4	0.0	0.0	100.0	5.1
6127	60	4	4.3	11.6	21.7	39.1	20.3	2.9	76.8	6.4
6130	58	4	5.1	7.6	17.7	46.8	21.5	1.3	77.2	7.6
6142	58	4	3.3	6.6	16.5	49.5	23.1	1.1	75.8	8.5
6150	61	4-5	1.5	6.0	11.9	37.3	35.8	7.5	56.7	6.3
6157	57	4-5	7.3	8.5	9.8	39.0	31.7	3.7	64.6	7.7
6174	60	4-5	6.0	10.0	14.0	32.0	34.0	4.0	62.0	9.5
6204	60	4	5.0	10.0	21.3	42.5	21.3	0.0	78.8	7.0
6235	57	4	15.8	10.5	18.4	42.1	10.5	2.6	86.8	3.8
6267	58	4-5	6.2	7.7	12.3	33.8	33.8	6.2	60.0	5.6
6268	61	4	10.8	16.1	21.5	32.3	15.1	4.3	80.6	8.5
6269	61	4	6.1	9.1	18.2	42.4	18.2	6.1	75.8	3.0
6270	61	4	8.6	13.8	29.3	36.2	10.3	1.7	87.9	5.4
6271	57	3-4	17.6	17.6	31.4	31.4	2.0	0.0	98.0	4.9
6369	57	4	15.8	23.7	23.7	28.9	7.9	0.0	92.1	3.6
6372	56	4-5	4.0	12.0	16.0	32.0	28.0	8.0	64.0	4.7
6375	57	4	6.0	10.4	19.4	35.8	26.9	1.5	71.6	6.5
6383	56	4	5.9	9.8	13.7	43.1	25.5	2.0	72.5	4.9
6384	56	4	5.0	6.3	18.8	61.3	8.8	0.0	91.3	7.8
6393	57	4	7.6	13.0	21.7	40.2	16.3	1.1	82.6	8.6
6395	56	4	4.5	9.0	22.4	58.2	6.0	0.0	94.0	6.1
Minuette	61	4	4.4	7.4	22.1	57.4	8.8	0.0	91.2	6.3
Savannah	57	4	10.0	22.9	31.4	32.9	2.9	0.0	97.1	6.6
LSD@5%										3.6

[z]Mean of 2 replications; subplots of 5' were harvested from single 20' plots in rows 30" apart.
[y]Percent calculated as % of total of 1-6 sieve beans.

Table 4. Notes on preliminary full sieve green bean lines, June 16 planting, Corvallis, 2005.

Line	Plant Growth Habit[z]	Heat Tolerance[y]	Pod Length (cm)	Pod Straightness[x]	Pod Cross Section[w]	Pod Smoothness[v]	Pod Color[u]	Flavor[t]				Notes
								Sweetness	Astringency	Beaniness	Perfuminess	
91G	3	5	16	3	round	3	5	5	7	7	1	Very bad split set; short pods & blanks
OR 54	5	5	14	5	round	5	5	5	7	5	1	Good pods despite heat; a few pollywogs
5630	3	9	15	6	round	5	5	5	7	5	1	No six sieve but getting seedy; pods small and bumpy
5669	5	5	14	7	round	7	6	6	7	5	1	Good set, little affected by the heat; good pod quality
6137	5	7	14	5	round	5	8	5	7	5	1	Excellent yielder on a nice architectural type, but too bushy; tends to lodge with high pod set; excellent color but may be too dark for processors.
6175	9	1	14	8	round	9	7	5	8	5	1	Very nice bean; long slender, dark green, straight & smooth; little heat stress; some split set
6185	9	1	13	5	round	7	8	3	9	7	5	Bad split set; shiny dark green; reverse curve; some blanks
6189	9	7	15	5	round	7	7	5	7	5	1	Short pods in 3 sieve; some blanks in other sizes
6229	1	1	13	5	round	3	3	5	7	5	1	Indeterminate; very bad split set; hard to pick-does not detach at pedicel but breaks at neck; some blanks
6230	1	1	14	6	heart to round	7	3	3	7	7	1	Segregating for strings; mix of short & long pods; pollywogs, blanks
6231	1	3	14	3	oval	3	3	3	7	5	3	Many blanks and pollywogs
6232	1	1	15	3	oval to round	7	3	5	7	5	1	Bad split set; large seed cavities but small seeds; some pollywogs & blanks in all sizes
6239	1	1	13	5	round	5	4	3	7	5	5	Blanks & pollywogs; mix of light large oval and smaller round green type
6241	3	3	10	7	heart to round	7	6	5	7	5	1	Split set; short pods

Table 4. Notes on preliminary full sieve green bean lines, June 16 planting, Corvallis, 2005 (cont).

Line	Plant Growth Habit[z]	Heat Tolerance[y]	Pod Length (cm)	Pod Straightness[x]	Pod Cross Section[w]	Pod Smoothness[v]	Pod Color[u]	Flavor[t]				Notes
								Sweetness	Astringency	Beaniness	Perfuminess	
6258	3	5	12	7	flat	5	5	5	7	5	1	Purple flowers; flat pods; mini romano with purple striping on pods; very good lodging resistance & architecture
6265	5	1	10	7	cb	5	3	5	5	7	1	Short pod; color too light; some heat stress
6275	3	7	15	3	round to cb	3	5	5	7	5	3	Very junky-pollywogs & blanks in all sizes; segregating for strings
6279	7	5	15	5	round	5	5	5	7	5	1	Stringy; little sign of heat stress
6280	3	3	15	7	round	5	5	5	7	5	1	Stringy
6283	5	5	13	7	oval	5	5	5	7	5	1	Flats and ovals; strings; little heat stress
6284	7	5	13	6	round	4	5	3	7	5	1	Some blanks in all sizes
6288	1	1	12	3	oval to round	3	3	5	8	7	1	Immature white seed; highly variable maturity; heat stress
6290	7	5	15	3	round to cb	3	5	5	7	5	1	Short pods in 3 sieve; blanks in all sizes; stringy
6294	3	7	14	5	cb	3	4	7	5	1	1	Stringy; bumpy pods; heat stress--curved pods, blanks, etc.
6295	5	3	14	3	heart	5	5	5	9	5	1	Bad split set; many ovals
6296	5	3	14	3	round	7	5	5	7	7	1	Some curved pods, blanks & pollywogs
6300	3	7	15	7	oval to round	5	7	5	7	5	1	Generally good quality
6303	5	3	14	3	round	3	5	5	7	5	1	Lots of flats; junky pods, pollywogs, blanks in all sizes
6313	7	3	15	5	heart	3	5	5	9	5	1	Short pods, pollywogs& blanks in all sizes
6315	3	7	13	6	heart to round	5	5	3	5	7	1	Short pods & blanks mainly in 3 & 4 sieve
6318	5	5	14	3	round	5	5	5	5	7	1	
6320	5	3	14	3	round	3	6	5	5	7	1	Very bad split set; indeterminate; pollywogs in 3 sieve; some blanks in all sizes

Table 4. Notes on preliminary full sieve green bean lines, June 16 planting, Corvallis, 2005 (cont).

Line	Plant Growth Habit[z]	Heat Tolerance[y]	Pod Length (cm)	Pod Straightness[x]	Pod Cross Section[w]	Pod Smoothness[v]	Pod Color[u]	Flavor[t]				Notes
								Sweetness	Astringency	Beaniness	Perfuminess	
6323	3	5	12	4	round	5	5	5	7	5	1	Good quality
6329	3	5	13	7	round	7	6	5	7	7	1	A few short pods in 3 sieve but generally looks good
6330	3	1	14	7	round	5	5	5	7	5	1	
6335	3	5	13	5	round	3	5	3	7	5	1	Blanks & pollywogs
6337	5	7	14	5	round	3	5	3	5	5	1	Short pods; blanks & pollywogs in all sizes
6338	3	5	12	7	round	5	5	5	5	5	1	Short pods and pollywogs in 3 sieve
6339	5	5	15	5	round	3	5	5	7	5	1	Blanks & pollywogs in all sizes
6340	5	5	13	7	round	7	5	5	7	5	1	Short pods in 3 sieve
6342	3	5	13	3	round to cb	5	5	5	7	5	1	Blanks in all sizes
6345	3	7	14	5	round	7	5	3	9	5	1	Very similar to 5669 but more heat sensitive; split set and short pods, some poorly filled.
6346	5	5	13	5	round	5	5	3	7	5	1	Short pods; many blanks; some pollywogs
6347	5	5	14	4	round to cb	4	5	3	3	5	1	Junky 3 sieve; many short pods in all sizes
6363	3	3	13	3	oval to cb	3	5	5	3	7	1	Flats, ovals; mix of sizes & maturities; severe heat stress--short pods, blanks, pollywogs

[z]Scores based on 1-9 scale with 9 = most upright; readings taken day of harvest. [y]Scores based on 1-9 scale with 9 = most heat tolerant. [x]Scores based on a 1-9 scale with 9 straightest. [w]Cross section: cb = crease-back. [v]Scores based on a 1-9 scale with 9 smoothest. [u]Scores based on a 1-9 scale with 9 darkest. [t]Scores based on a 1-9 scale with 9 strongest.

Table 5. Notes on preliminary small sieve green bean lines, June 16 planting, Corvallis, 2005.

Line	Plant Growth Habit[z]	Heat Tolerance[y]	Pod Length (cm)	Pod Straightness[x]	Pod Cross Section[w]	Pod Smoothness[v]	Pod Color[u]	Flavor[t]				Notes
								Sweetness	Astringency	Beaniness	Perfuminess	
5613	5	5	13	5	heart to round	3	5	5	9	5	1	Not much evidence of heat stress
6127	7	3	14	8	cb	8	6	5	7	7	1	Nice looking bean; little heat stress
6130	9	5	14	5	round	7	6	5	8	5	1	Very nice bean with mostly straight pods; little heat stress; nice compact upright bush.
6142	7	9	11	7	round	7	4	3	8	3	1	Shiny yellow green pods; Minuette type
6150	7	5	11	8	round	9	5	5	5	3	1	Minuette type pod; nice appearance but could get short under heat stress; a few pollywogs but otherwise little heat stress
6157	5	7	14	5	oval to cb	5	5	3	5	7	1	Short pods; blanks; pollywogs; shiny pod
6174	9	3	15	7	round	7	7	5	8	5	1	Dark green pod; long, slender & straight; little evidence of heat stress
6204	9	5	14	7	oval	9	5	7	7	3	7	A few pollywogs and curved pods; segregating strings?
6235	1	3	12	5	round	3	3	5	5	7	1	Junky--many blanks, pollywogs & short pods in all sizes; easy pick line
6267	1	3	12	5	round	5	5	5	7	7	1	Short pod, may segregate for strings; not much heat stress
6268	1	3	15	6	round	7	4	3	5	7	1	Oval mix; brittle neck type

Table 5. Notes on preliminary small sieve green bean lines, June 16 planting, Corvallis, 2005 (cont).

Line	Plant Growth Habit[z]	Heat Toler-ance[y]	Pod Length (cm)	Pod Straight-ness[x]	Pod Cross Section[w]	Pod Smooth-ness[v]	Pod Color[u]	Flavor[t]				Notes
								Sweet-ness	Astrin-gency	Beani-ness	Perfu-mi-ness	
6269	1	1	12	1	round	5	3	5	9	7	1	Very bad split set; heat stress--fish hooks, blanks & pollywogs
6270	5	1	11	1	round to cb	3	3	5	5	7	1	Extreme heat stress - hooked pods, blanks & pollywogs
6271	3	3	12	3	oval	3	7	1	9	7	1	Not much evidence of heat stress
6369	3	3	13	3	round	3	5	5	7	5	1	Short pods, pollywogs & blanks in all sizes
6372	3	3	14	5	round	5	6	5	7	5	1	Short pods & blanks
6375	3	5	14	5	round	5	5	5	7	5	1	Not much evidence of heat stress
6383	9	3	11	7	round	3	5	5	3	5	1	Short & junky; lots of blanks & pollywogs
6384	7	5	11	7	oval	5	3	5	7	7	1	Oval with slight curve; strings
6393	5	5	15	3	heart	7	5	5	7	5	1	3 sieve are short & junky; other sizes OK
6395	5	5	12	7	oval	7	5	3	5	3	1	Partial strings; some blanks
Minuette	9	9	10	9	round	9	5	5	3	3	7	Heat stress - mainly shortened pods
Savannah	9	3	13	7	round	9	6	3	8	5	3	Good pod quality; no evidence of heat stress

[z]Scores based on 1-9 scale with 9 = most upright; readings taken day of harvest. [y]Scores based on a 1-9 scale with 9 straightest. [x]Cross section: cb = crease-back. [w]Scores based on a 1-9 scale with 9 smoothest. [v]Scores based on a 1-9 scale with 9 darkest. [u]Scores based on a 1-9 scale with 9 strongest.

Table 6. Performance of commercial green bean varieties, June 30 planting, Corvallis, 2005.

Variety	Source	AV Stand	Intended Use	Days	Percent Sieve Size[z]							Tons/Acre Sieve Size						Graded Total[y]	$/Acre[x]
					1	2	3	4	5	6	1-4	1	2	3	4	5	6		
91G	OSU	140	full sieve	58	4.3	4.7	10.2	28.0	44.5	8.3	47.2	0.48	0.52	1.13	3.09	4.92	0.91	11.05*	889
				60	3.9	4.3	6.4	22.1	50.4	12.9	36.8	0.48	0.52	0.78	2.70	6.13	1.57	12.18	884
OR 54	OSU	140	full sieve	60	8.6	8.1	14.9	36.5	27.9	4.1	68.0	0.83	0.78	1.44	3.52	2.70	0.39	9.66	927
				61	1.9	5.9	11.2	32.0	39.4	9.7	50.9	0.22	0.70	1.31	3.74	4.61	1.13	11.70*	974
				62	4.2	5.3	9.2	26.9	41.7	12.7	45.6	0.52	0.65	1.13	3.31	5.13	1.57	12.31	975
5630	OSU	140	full sieve	58	6.1	6.9	14.6	49.4	21.9	1.2	76.9	0.65	0.74	1.57	5.31	2.35	0.13	10.74	1103
				60	5.3	5.6	10.2	40.4	36.8	1.8	61.4	0.65	0.70	1.26	5.00	4.57	0.22	12.40*	1129
5669	OSU	140	full sieve	58	5.0	5.9	14.6	39.3	32.0	3.2	64.8	0.48	0.57	1.39	3.74	3.05	0.30	9.53*	892
				60	3.8	3.8	8.2	27.7	43.8	12.7	43.5	0.48	0.48	1.04	3.52	5.57	1.61	12.70	986
1741	Pure Line	128	full sieve	61	8.8	11.5	15.5	34.5	25.7	4.1	70.3	0.57	0.74	1.00	2.22	1.65	0.26	6.44	629
				63	7.6	8.8	12.9	24.7	40.0	5.9	54.1	0.57	0.65	0.96	1.83	2.96	0.44	7.40*	633
BSC 867	Brotherton	138	full sieve	60	6.8	6.8	8.1	23.4	43.2	11.7	45.0	0.65	0.65	0.78	2.26	4.18	1.13	9.66*	761
				62	5.5	5.1	7.0	16.9	44.5	21.0	34.6	0.65	0.61	0.83	2.00	5.26	2.48	11.83	839
SB 4285	Syngenta	140	full sieve	58	7.0	11.5	17.7	35.0	27.6	1.2	71.2	0.74	1.22	1.87	3.70	2.91	0.13	10.57	1040
				60	4.7	6.1	11.9	35.6	38.8	2.9	58.3	0.57	0.74	1.44	4.31	4.70	0.35	12.09*	1073
SB 4286	Syngenta	140	full sieve	58	5.8	9.8	18.8	40.2	25.4	0.0	74.6	0.70	1.17	2.26	4.83	3.05	0.00	12.01	1212
				60	4.8	6.3	11.6	34.3	40.6	2.4	57.0	0.70	0.91	1.70	5.00	5.92	0.35	14.57*	1279
Ulysses	Seminis	140	5 sieve	56	3.4	4.2	11.9	36.0	43.2	1.3	55.5	0.35	0.44	1.22	3.70	4.44	0.13	10.27*	889
				57	3.0	3.4	7.6	33.1	49.6	3.4	47.0	0.30	0.35	0.78	3.39	5.09	0.35	10.27	824
Sag	Pure Line	53	5 sieve	61	11.4	12.3	11.4	21.1	32.5	11.4	56.1	0.57	0.61	0.57	1.04	1.61	0.57	4.96*	432
				63	9.5	13.1	13.1	17.5	35.0	11.7	53.3	0.57	0.78	0.78	1.04	2.09	0.70	5.96	506
BSC 847	Brotherton	140	4 sieve	56	5.6	7.2	26.7	53.4	7.2	0.0	92.8	0.61	0.78	2.91	5.83	0.78	0.00	10.92*	986
				57	5.7	5.7	24.5	56.3	7.9	0.0	92.1	0.57	0.57	2.44	5.61	0.78	0.00	9.96	874

Table 6. Performance of commercial green bean varieties, June 30 planting, Corvallis, 2005 (cont.).

Variety	Source	AV Stand	Intended Use	Days	Percent Sieve Size[z]							Tons/Acre Sieve Size						Graded Total[y]	$/Acre[x]
					1	2	3	4	5	6	1-4	1	2	3	4	5	6		
EX15330733	Seminis	139	4 sieve	56	3.9	5.4	15.8	42.9	31.5	0.5	68.0	0.35	0.48	1.39	3.78	2.78	0.04	8.83*	622
				57	2.9	4.4	12.7	41.7	37.3	1.0	61.8	0.26	0.39	1.13	3.70	3.31	0.09	8.87	574
Minuette	Harris Moran	139	4 sieve	61	7.3	14.0	29.1	48.6	1.1	0.0	98.9	0.57	1.09	2.26	3.78	0.09	0.00	7.79*	776
				62	6.3	9.5	26.5	54.0	3.7	0.0	96.3	0.52	0.78	2.18	4.44	0.30	0.00	8.22	770
Savannah	Harris Moran	140	4 sieve	60	6.4	13.3	33.9	44.0	2.3	0.0	97.7	0.61	1.26	3.22	4.18	0.22	0.00	9.48*	960
				62	4.4	6.5	24.0	57.8	7.3	0.0	92.7	0.52	0.78	2.87	6.92	0.87	0.00	11.96	1046
BSC 844	Brotherton	140	3-4 sieve	57	7.0	11.3	39.4	41.3	0.9	0.0	99.1	0.65	1.04	3.65	3.83	0.09	0.00	9.27*	967
				60	5.6	6.8	30.5	55.0	2.0	0.0	98.0	0.61	0.74	3.31	5.96	0.22	0.00	10.83	1026
EX08120667	Seminis	140	3-4 sieve	56	11.6	21.7	31.9	30.4	4.3	0.0	95.7	0.70	1.31	1.91	1.83	0.26	0.00	6.00	645
				57	7.7	15.5	31.0	37.5	8.3	0.0	91.7	0.57	1.13	2.26	2.74	0.61	0.00	7.31*	723
				60	5.6	6.7	14.4	49.7	21.5	2.1	76.4	0.48	0.57	1.22	4.22	1.83	0.17	8.48	637
EX08120693	Seminis	140	3-4 sieve	58	6.0	10.3	24.1	47.4	12.1	0.0	87.9	0.61	1.04	2.44	4.79	1.22	0.00	10.09*	896
				60	3.2	3.6	15.7	55.4	21.3	0.8	77.9	0.35	0.39	1.70	6.00	2.31	0.09	10.83	793
EX08120695	Seminis	140	3-4 sieve	57	10.2	24.4	34.6	26.8	3.9	0.0	96.1	0.57	1.35	1.91	1.48	0.22	0.00	5.52*	609
				60	5.3	8.6	26.7	50.8	8.6	0.0	91.4	0.44	0.70	2.18	4.13	0.70	0.00	8.13	736
Valentino	Seminis	140	3-4 sieve	57	5.6	15.7	35.9	38.9	4.0	0.0	96.0	0.48	1.35	3.09	3.35	0.35	0.00	8.61*	884
				60	5.2	6.8	22.7	53.4	12.0	0.0	88.0	0.57	0.74	2.48	5.83	1.31	0.00	10.92	931
Stayton	Syngenta	140	2-3 sieve	57	17.2	68.0	14.8	0.0	0.0	0.0	100.0	1.26	5.00	1.09	0.00	0.00	0.00	7.35*	896
				60	8.9	55.0	36.1	0.0	0.0	0.0	100.0	0.78	4.83	3.18	0.00	0.00	0.00	8.79	802
Redon	Syngenta	140	2 sieve	58	36.4	63.6	0.0	0.0	0.0	0.0	100.0	1.74	3.05	0.00	0.00	0.00	0.00	4.79	684
				60	29.5	69.8	0.7	0.0	0.0	0.0	100.0	1.78	4.22	0.04	0.00	0.00	0.00	6.05*	858

[z]Percent calculated as % of total of 1-6 sieve beans. [y]Total tons/acre of the graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 7 because some beans are lost in the grading process. Analysis of variance (Table 7) was calculated using the harvest marked with *. [x]$/acre for full sieve beans based on $120/ton for 1-4 sieve and $45/ton for 5-6 sieve; for 3-4 sieve beans based on $131/ton for 1-3 sieve, $69/ton for 4 sieve and $25/ton for 5-6 sieve; and for 2 sieve beans based on $143/ton for 1-2 sieve and $0/ton for 3-6 sieve.

Table 7. Statistical comparison of yields and dollar return of commercial green bean lines, Corvallis, 2005[z].

Line	Intended Use	T/A Unadjusted	T/A Adjusted[y]	$/A
91G	full sieve	11.7	11.4	945
OR 54	full sieve	12.6	12.7	1046
5630	full sieve	13.0	14.4	1184
5669	full sieve	10.2	11.7	953
1741	full sieve	7.7	8.1	663
BSC 867	full sieve	9.9	9.4	781
SB 4285	full sieve	12.7	13.7	1127
SB 4286	full sieve	15.0	16.0	1313
Ulysses	5 sieve	10.9	11.6	946
Sag	5 sieve	5.2	5.5	455
BSC 847	4 sieve	11.3	11.3	1017
EX15330733	4 sieve	9.2	9.2	650
Minuette	4 sieve	8.7	8.7	810
Savannah	4 sieve	9.8	9.8	996
BSC 844	3-4 sieve	9.7	9.7	1013
EX08120667	3-4 sieve	7.6	7.6	749
EX08120693	3-4 sieve	10.4	10.4	927
EX08120695	3-4 sieve	8.5	8.5	767
Valentino	3-4 sieve	8.8	8.8	906
Stayton	2-3 sieve	7.7	7.7	1107
Redon	2 sieve	6.3	6.3	902
118	Romano	12.0	12.0	1018
LSD @ 5%		1.9	1.9	172

[z]Based on one selected harvest for each variety (marked with * on Table 6), 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 5 sieve beans were adjusted to 50% 1-4 sieve; all others were unadjusted.

Table 8. Notes on June 30 commercial bean trial, Corvallis, Oregon, 2005.

Line	Pod Length (cm)	Pod Straight-ness[z]	Pod Cross Section[y]	Pod Smooth-ness[x]	Pod Color[w]	Flavor[v]				Notes
						Sweet-ness	Astrin-gency	Beani-ness	Perfumi-ness	
91G	17	4	round	4	5	7	7	7	1	Long pods with tendency to curve; probably sweetest flavor in all the trial.
OR54	17	7	round	5	5	5	7	5	1	Attractive appearance in this trial; some heat stress (short pods).
5630	16	5	round	5	5	3	9	5	1	Long podded BBL type very similar to 91G; very strong flavor in this trial.
5669	16	5	round	5	6	5	8	7	1	Long podded BBL type very similar to 91G; very strong flavor in this trial; signs of heat stress (short pods, blanks).
1741	16	5	round	7	4	5	7	5	1	Fine pubescence on pods and stems; many spent blossoms clinging to pods and stems because of pubescence, which may make the variety more prone to white mold infection; fairly hard to pick; leggy bush habit; pods too light to blend with 91G.
BSC 867	18	3	heart	7	6	1	3	1	1	Long slender pods with good color but a tendency to curve; very different flavor compared to other beans - no sweetness; developing internal cavitations in 6 sieve.
SB4285	15	6	round to cb	6	3	5	7	3	1	Lighter interior and exterior color than SB4286 - too light to blend with 91G; medium long pods with reverse curve; EZ pick type; very similar to BBL type.
SB4286	13	6	round	6	4	6	7	5	1	Darker interior and exterior color than SB4285, but still slightly lighter than 91G; short to medium length pods with reverse curve; EZ pick type; very similar to BBL type and flavor.

Table 8. Notes on June 30 commercial bean trial, Corvallis, Oregon, 2005 (cont.)

Line	Pod Length (cm)	Pod Straight-ness[z]	Pod Cross Section[y]	Pod Smooth-ness[x]	Pod Color[w]	Flavor[v]				Notes
						Sweet-ness	Astrin-gency	Beani-ness	Perfumi-ness	
Ulysses	15	6	round	8	7	6	1	3	1	Possible EZ pick line; very attractive straight, smooth, dark green persistent chlorophyll type; some blanking from heat stress; may be too dark to blend with 91G.
Sag	15	3	round	7	4	3	3	5	7	Large leggy plants; severe split set; plants and stems have fine fresh market type pubescence; fairly long curved pods.
BSC 847	16	3	heart	7	3	5	3	5	1	Hard to pick (high pod detachment force); long slender bean, tends to be curved due to length; color too light to blend with 91G.
EX15330733	14	6	round	9	7	3	3	5	3	Very attractive persistent chlorophyll type; medium long, smooth dark green pods - color may be too dark to blend with 91G.
Minuette	12	9	round	7	5	3	6	1	5	Yellow green pods; very straight.
Savannah	13	6	round	9	7	5	3	9	3	Very attractive straight, smooth, dark green pods; oval off-type.
BSC 844	15	5	heart-round	7	3	6	7	5	1	Long slender pods with reverse curve; bordering on oval cross section especially in 3 sieve.
EX08120667	14	7	heart	7	7	3	7	7	1	EZ pick type; brittle stems; attractive pods-long, straight, dark green; contains stringy off-type.
EX08120693	15	7	oval/heart/ round	9	7	2	7	3	1	Attractive dark green, dull, persistent chlorophyll type pods; most similar to BBL type of the Seminis lines; very astringent flavor with little sweetness; slight reverse curve; EZ pick type with brittle stems.

Table 8. Notes on June 30 commercial bean trial, Corvallis, Oregon, 2005 (cont.)

Line	Pod Length (cm)	Pod Straight-ness[z]	Pod Cross Section[y]	Pod Smooth-ness[x]	Pod Color[w]	Flavor[v]				Notes
						Sweet-ness	Astrin-gency	Beani-ness	Perfumi-ness	
EX08120695	15	7	heart	9	7	5	7	5	1	EZ pick type; split set in 3 of 4 plots; long slender dark green pods with slight reverse curve.
Valentino	15	7	heart-round	9	7	5	7	5	1	EZ pick; long smooth dark green pods with reverse curve; some ovals in 3 sieve
Stayton	14	7	round	7	3	5	5	7	1	Attractive fine bean; color is light to blend with 91G.
Redon	12	7	round	7	3	7	7	7	1	Excellent flavor; attractive 1 - 2 sieve bean but too light to blend with 91G.
118	17 x 1.7	5	flat	5	5	3	5	8	1	Romano type; better plant habit than most romano types, but late.

[z]Scores based on a 1-9 scale with 9 straightest
[y]Cross section: cb = crease-back
[x]Scores based on a 1-9 scale with 9 smoothest
[w]Scores based on a 1-9 scale with 9 darkest
[v]Scores based on a 1-9 scale with 9 strongest

Table 9. Fusarium root rot infection, Corvallis, 2005[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
B7732-1	6	6	6.0	late	2.0	low	1.5	strings
B7732-3	6	6	6.0	med	2.0	high	2.0	strings
B7732-7	6	6	6.0	med	2.0	high	2.0	strings
B7732-15	6	6	6.0	early	2.0	high	2.0	strings
B7732-16	6	7	6.5	med	3.0	med	2.5	strings
B7732-19	7	5	6.0	early	2.0	med	1.5	strings
B7732-22	6	6	6.0	late	2.5	low	1.0	
B7732-24	4	7	5.5	med	2.0	low	2.0	
B7732-26	6	6	6.0	med	2.0	high	2.0	strings
B7732-27	6	7	6.5	early	3.0	med	2.5	
B7732-30	7	7	7.0	late	2.5	med	1.0	plants very stunted; strings
B7732-35	5	6	5.5	late	2.0	low	2.0	
B7732-38	6	6	6.0	med	2.0	high	1.5	strings
B7732-41	6	3	4.5	med	2.0	high	2.0	strings
B7732-42	6	6	6.0	late	2.0	med	2.0	strings
B7733-6	5	5	5.0	med	2.0	low	2.0	
B7733-8	4	7	5.5	med	2.0	med	2.0	strings
B7733-11	7	7	7.0	early	2.0	low	2.5	good flavor
B7733-12	6	6	6.0	late	2.0	low	1.5	
B7733-21	6	7	6.5	med	2.5	med	1.0	plants very stunted; strings
B7733-25	8	6	7.0	early	2.5	high	1.5	strings
B7733-26	7	6	6.5	early	3.0	high	1.5	strings
B7733-29	4	5	4.5	late	2.0	med	1.5	strings
B7733-30	6	7	6.5	med	2.0	low	2.0	
B7733-31	5	7	6.0	late	2.0	med	1.5	
B7733-32	6	5	5.5	early	2.0	high	2.0	strings
B7733-34	6	5	5.5	med	1.5	high	1.5	strings
B7733-35	6	6	6.0	med	2.0	low	2.0	
B7733-36	5	6	5.5	late	2.0	low	2.0	
B7734-6	7	6	6.5	early	3.5	high	1.5	strings
B7734-7	7	6	6.5	med	2.0	high	2.5	strings
B7734-8	7	7	7.0	late	2.5	high	2.0	strings
B7734-13	7	7	7.0	med	1.5	high	2.0	strings
B7734-14	7	8	7.5	late	2.5	low	1.0	poor stand
B7734-19	8	8	8.0	early	2.0	med	3.0	
B7734-21	7	6	6.5	med	2.0	med	1.0	strings
B7734-23	6	6	6.0	early	2.0	med	2.5	
B7734-24	8	6	7.0	early	3.0	high	2.5	strings
B7734-27	7	7	7.0	med	2.0	med	2.0	strings
B7734-29	6	6	6.0	med	1.5	high	2.0	strings
B7734-31	6	7	6.5	med	2.5	med	2.5	
B7734-32	6	6	6.0	late	2.5	high	1.5	strings
B7734-33	7	6	6.5	early	3.0	high	2.5	rogues
B7734-36	5	7	6.0	med	3.0	high	2.5	
B7734-37	6	7	6.5	med	2.0	med	2.0	
B7734-38	7	7	7.0	late	2.5	high	2.0	strings
B7734-39	6	7	6.5	med	2.0	high	2.5	strings
B7734-44	6	6	6.0	late	2.5	high	1.5	rogues; strings

Table 9. Fusarium root rot infection, Corvallis, 2005 (cont.)[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
B7734-45	6	6	6.0	med	2.5	high	2.0	strings
B7734-46	4	6	5.0	med	2.0	high	2.0	strings
B7734-47	6	5	5.5	med	2.0	med	2.0	
B7734-54	6	7	6.5	late	2.0	high	2.0	strings
B7735-1	8	6	7.0	late	2.0	med	2.0	
B7735-2	7	6	6.5	early	2.0	med	2.0	
B7735-9	7	6	6.5	med	2.0	med	1.5	
B7735-11	6	7	6.5	early	2.0	med	1.0	
B7735-12	7	7	7.0	early	2.0	low	1.5	
B7735-13	6	8	7.0	med	2.0	high	2.0	strings
B7735-14	8	7	7.5	early	2.5	high	2.0	strings
B7735-17	6	7	6.5	med	2.0	high	2.0	strings
B7735-18	6	7	6.5	med	2.5	low	1.5	
B7735-19	7	7	7.0	early	1.5	med	2.0	
B7735-20	5	7	6.0	early	2.0	med	2.0	
B7735-23	6	6	6.0	early	2.0	low	2.0	
B7735-24	6	7	6.5	med	2.5	high	2.0	
B7735-25	8	7	7.5	med	2.5	high	2.0	
B7735-30	5	7	6.0	late	2.5	low	2.0	
B7735-32	7	7	7.0	early	2.0	med	2.0	
B7735-36	7	6	6.5	med	2.0	high	2.0	strings
B7735-39	6	6	6.0	med	2.5	med	1.5	
B7735-41	6	7	6.5	med	2.0	med	2.0	
B7735-43	6	6	6.0	med	1.5	med	1.0	
B7735-47	5	6	6.0	early	2.0	high	2.0	strings
B7735-48	5	6	5.5	med	2.0	med	2.0	strings
B7735-51	6	6	6.0	early	3.5	high	2.0	strings
B7735-53	5	6	5.5	med	3.0	med	2.0	strings
B7735-57	6	7	6.5	early	2.0	med	2.0	
B7735-59	7	5	6.0	early	1.5	med	1.5	
B7735-61	6	6	6.0	early	2.0	low	2.0	
B7735-62	7	7	7.0	med	2.5	low	2.0	
B7735-64	7	7	7.0	late	2.0	low	2.0	
B7735-65	9	6	7.0	early	1.5	med	2.0	
B7735-66	7	6	6.5	late	2.5	low	1.5	
B7735-67	6	7	6.5	late	2.0	med	2.0	
B7735-68	6	5	5.5	early	2.5	low	1.5	
B7735-69	6	6	6.0	early	2.0	high	2.0	strings
B7735-70	7	6	6.5	med	2.5	low	2.0	
B7735-72	7	7	7.0	early	2.0	high	2.5	strings
B7735-73	6	6	6.0	early	2.5	med	2.0	
B7735-74	6	7	6.5	med	2.0	med	2.0	
B7735-75	7	7	7.0	early	2.0	low	1.5	
B7738-2	6	7	6.5	med	2.0	med	2.0	strings
B7738-3	5	6	5.5	med	2.5	med	2.5	
B7738-4	6	7	6.5	late	2.5	low	1.5	
B7738-5	7	8	7.5	early	2.5	high	1.0	strings

Table 9. Fusarium root rot infection, Corvallis, 2005 (cont.)[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
B7738-9	6	5	5.5	late	2.0	high	2.0	strings
B7738-10	7	7	7.0	med	3.0	med	1.0	
B7738-12	6	6	6.0	med	2.0	high	2.0	
B7738-16	7	7	7.0	med	3.0	high	1.5	strings
B7738-20	5	6	5.5	med	3.0	med	2.0	
B7738-22	8	6	7.0	med	1.5	high	1.5	strings
B7738-23	7	6	6.5	late	3.0	med	1.0	plants very stunted
B7738-26	7	7	7.0	med	3.0	high	1.5	strings
B7738-29	6	6	6.0	early	2.0	med	2.0	
B7738-30	5	5	5.0	late	2.0	med	2.0	
B7738-32	7	7	7.0	med	2.5	med	1.5	
B7738-34	7	7	7.0	med	2.0	high	1.0	strings
B7738-35	6	7	6.5	late	2.5	low	1.0	
B7738-37	7	7	7.0	late	2.5	low	1.0	strings
B7738-38	5	6	5.5	late	2.0	med	2.0	
B7738-39	7	6	6.5	med	2.5	high	2.5	strings
B7738-40	5	7	6.0	late	3.0	low	1.0	
B7738-42	6	5	5.5	med	2.5	med	2.0	
B7738-45	5	5	5.0	late	2.0	med	2.5	strings
B7738-48	6	5	5.5	late	2.0	low	2.0	
B7738-49	7	7	7.0	med	2.5	med	1.0	
B7738-53	6	7	6.5	med	2.5	high	2.0	
B7739-8	6	6	6.0	med	2.5	high	2.0	
B7739-9	5	6	5.5	med	2.0	low	2.5	
B7739-12	6	6	6.0	late	2.0	med	2.0	
B7739-14	5	6	5.5	late	2.0	med	2.5	hooked pods; strings
B7739-16	6	6	6.0	med	3.0	high	2.0	strings
B7739-17	4	5	4.5	med	2.5	med	2.0	
B7739-19	6	5	5.5	late	2.5	high	3.0	strings
B7739-20	6	6	6.0	late	2.5	low	1.0	
B7739-24	8	7	7.5	early	2.5	high	2.5	strings
B7739-27	7	7	7.0	med	2.5	high	2.0	strings
B7739-29	5	7	6.0	med	3.0	med	1.5	hooked pods; strings
B7739-30	6	5	5.5	med	2.0	med	1.5	strings
B7739-32	6	5	5.5	late	2.0	med	1.5	
B7739-35	6	6	6.0	late	2.0	low	2.0	
B7739-39	6	6	6.0	late	2.5	med	1.5	strings
B7739-44	6	7	6.5	late	3.0	med	1.5	very stunted plants; strings
B7739-45	5	4	4.5	med	2.5	high	1.5	strings
DM4NY6	4	5	4.5	late	vine	high	3.0	segregating for strings
DM6NY1	6	5	5.5	late	3.0	med	2.5	segregating for habit and fiber
NY 5517	6	5	5.5	early	2.0	med	2.5	
RR 4270	5	6	5.5	late	2.0	med	2.5	
WIS 46RR	5	5	5.0	late	1.5	med	2.5	
WIS 83RR	6	5	5.5	late	2.0	low	2.0	
FR 266	6	6	6.0	med	2.0	med	1.5	strings

Table 9. Fusarium root rot infection, Corvallis, 2005 (cont.)[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
B7030-24	2	4	3.0	late	2.0	med	3.0	strings
B7126-33-1-2	5	7	6.0	late	2.0	low	2.0	
B7239-5-4	6	6	6.0	late	2.0	low	1.0	hooked pods
GF1	6	5	5.5	med	1.5	low	2.0	small plants but yield OK
GF3	7	7	7.0	med	2.0	high	2.0	strings
GF4	6	6	6.0	late	3.0	low	1.5	
GF5	8	6	7.0	late	1.5	low	2.0	
GF6	6	7	6.5	late	3.0	high	2.0	strings
GF7	6	7	6.5	late	2.5	low	2.0	
GF8	6	7	6.5	med	2.5	med	1.5	
GF9	6	6	6.0	late	3.0	med	2.0	
GF10	5	6	5.5	late	2.0	low	2.0	
GF11	6	7	6.5	late	3.0	high	2.0	strings
GF12	7	7	7.0	late	2.0	low	2.0	
GF13	6	6	6.0	late	2.5	high	2.0	poor stand; strings
GF14	6	6	6.0	late	2.5	high	1.5	strings
GF15	6	6	6.0	late	3.0	low	1.5	
GF16	6	7	6.5	late	2.0	med	1.5	strings
GF17	6	7	6.5	late	3.0	high	1.0	strings
GF18	5	5	5.0	late	2.5	low	1.5	
GF19	6	5	5.5	early	2.0	low	2.0	some sterile plants
GF20	7	7	7.0	late	3.0	med	1.0	
GF21	6	6	6.0	late	3.0	med	2.0	strings
GF22	7	6	6.5	late	2.5	med	1.5	
GF24	6	8	7.0	late	2.5	high	2.0	strings
GF25	7	6	6.5	late	3.0	med	1.5	
GF26	6	7	6.5	med	3.0	high	1.5	strings
GF27	6	6	6.0	med	2.5	low	2.5	poor stand
GF28	6	6	6.0	late	2.5	high	2.0	strings
GF29	6	6	6.0	late	2.0	low	1.5	
GF30	6	7	6.5	late	2.0	low	2.0	
GF31	7	7	7.0	late	3.0	low	1.0	
GF33	6	6	6.0	late	2.0	med	1.0	strings
GF34	7	6	6.5	late	2.5	med	1.5	strings
GF35	6	6	6.0	late	2.5	low	1.5	
GF36	7	7	7.0	late	3.0	med	1.5	
GF38	5	7	6.0	med	2.0	low	1.5	
GF39	6	6	6.0	late	2.5	low	2.0	
GF40	7	7	7.0	late	2.5	high	1.5	strings
GF41	5	7	6.0	late	3.0	low	2.0	
GF42	6	6	6.0	late	2.5	low	1.5	hooked pods
GF43	6	7	6.5	late	3.0	low	1.0	
GF44	6	6	6.0	late	2.0	low	2.0	
GF45	6	6	6.0	late	2.5	low	2.0	
GF46	6	6	6.0	med	2.0	low	1.5	
GF48	6	5	5.5	late	3.0	high	1.0	strings

Table 9. Fusarium root rot infection, Corvallis, 2005 (cont.)[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
GF49	6	6	6.0	med	2.0	low	2.0	
GF50	6	6	6.0	early	2.0	med	2.0	
GF55	7	7	7.0	med	3.0	med	2.0	strings
GW1	4	3	3.5	med	1.5	high	3.0	strings
GW2	4	6	5.0	late	3.0	med	2.0	strings
GW3	6	6	6.0	late	2.0	med	1.5	poor stand
GW5	6	6	6.0	med	2.0	high	3.0	poor stand; strings
GW7	5	5	5.0	med	2.5	low	2.0	
GW8	7	7	7.0	late	3.0	med	1.0	poor stand
GW9	6	6	6.0	med	2.0	high	2.0	strings
GW11	5	6	5.5	early	1.5	high	3.0	strings
GW15	6	6	6.0	late	2.0	med	2.0	
GW16	5	3	4.0	med	2.5	med	3.5	
GW17	4	5	4.5	late	1.5	high	3.0	strings
GW20	6	7	6.5	late	2.0	low	1.0	
GW22	6	6	6.0	med	2.0	high	2.0	strings
GW23	6	6	6.0	late	3.0	low	1.0	
GW24	6	6	6.0	med	2.5	high	1.5	pollywogs; strings
GW25	7	6	6.5	late	2.5	med	1.5	pollywogs; strings
GW26	4	4	4.0	late	1.5	med	3.5	
GW27	5	6	5.5	late	2.3	med	2.5	strings
GW28	7	7	7.0	late	2.5	med	1.5	strings
GW29	6	6	6.0	late	2.5	med	2.0	strings
GW30	6	6	6.0	late	2.0	med	2.5	strings
GW31	6	6	6.0	late	2.0	med	2.0	strings
GW32	5	6	5.5	med	2.0	low	2.0	
GW34	4	5	4.5	late	2.0	high	2.0	strings
GW36	5	5	5.0	early	2.0	high	1.0	strings
GW37	6	5	5.5	late	2.0	low	2.0	
GW38	5	5	5.0	late	2.5	med	3.0	
GW40	7	7	7.0	early	3.5	low	1.5	poor stand; small plants but yield OK
GW42	6	7	6.5	late	2.0	low	2.0	
GW44	6	4	5.0	med	2.0	high	2.5	strings
GW45	8	7	7.5	med	2.0	high	2.0	strings
GW46	7	7	7.0	early	2.5	high	2.0	strings
GW47	6	6	6.0	late	2.0	low	2.0	strings
GW48	6	6	6.0	late	2.0	low	2.5	strings
GW49	5	7	6.0	late	2.5	med	1.5	strings
GW50	6	6	6.0	early	2.0	high	2.0	strings
GW53	6	6	6.0	late	1.5	med	2.0	
GW54	5	7	6.0	early	1.5	med	1.5	
GW55	5	5	5.0	late	1.0	low	2.5	
GW56	6	7	6.5	early	1.5	high	2.0	segregating for seed coat color; strings
GW57	5	7	6.0	early	3.0	high	2.0	strings
GW58	6	6	6.0	med	2.0	med	1.5	plants very stunted

Table 9. Fusarium root rot infection, Corvallis, 2005 (cont.)[z]

Line	Score[y] Rep 1	Rep 2	Average	Maturity	Habit[x]	Fiber	Vigor[w]	Notes
GW61	7	6	6.5	early	3.0	high	2.5	strings
GW62	5	6	5.5	med	2.0	low	2.5	
GW64	5	6	5.5	med	2.0	med	2.5	hooked pods
GW65	7	6	6.5	med	2.5	med	1.5	strings
GW67	5	6	5.5	med	2.0	med	2.0	strings
GW68	3	4	3.5	late	2.0	low	2.0	
GW70	5	7	6.0	late	1.5	med	1.0	viney; sterile pods
GW71	5	4	4.5	med	2.0	low	2.0	
GW73	6	7	6.5	late	2.5	low	2.0	
GW74	5	5	5.0	late	2.0	med	1.5	poor stand; strings
GW75	5	5	5.0	late	2.0	low	2.0	
GW76	6	7	6.5	med	2.0	high	2.0	strings
GW77	6	6	6.0	med	2.0	med	1.5	
GW78	6	6	6.0	late	3.0	low	1.5	poor stand
GW80	6	6	6.0	late	2.0	low	2.0	
GW81	5	7	6.0	early	2.5	low	2.0	
5446[v]	7	8	7.5	early	3.0	low	3.0	
RR 6950[v]	2	3	2.5	late	vine	high	6.0	
LSD @ 5%			1.4					

[z]Planted June 29.
[y]Two ratings were taken in each plot if there were sufficient plants; scores based on a 1-9 scale, with 1 = very light surface infection and 9 = roots mostly dead and plants stunted.
[x]Scores based on 1-4 scale, with 4 = upright.
[w]Vigor scores take into account both plant size and yield, and are based on 1-9 scale with 9 = most vigorous
[v]Checks; each rep score is an average of 6 plots.

Table 10. Results from a white mold screening trial, Corvallis, 2005[z].

Entry	White Mold Scores[y] Rep 1	Rep 2	Rep 3	Rep 4	Average White Mold Incidence[y]	White Mold Check Comparisons[x] G122	MO 162	91G	Growth Habit[w]	Estimated Yield[v]
B7710/6-1	1	1	2	2	1.5		*	*	2.0	2.5
B7714/6-6	1	1	2	2	1.5		*	*	2.3	2.3
NY2-5984-1	1	2	2	1	1.5		*	*	2.8	2.0
NYBS6643	1	2	1	2	1.5		*	*	2.8	1.3
6229	1	1	2	2	1.5		*	*	2.5	2.8
6236	1	1	2	2	1.5		*	*	1.8	2.5
B7715/6-2	2	1	2	2	1.8		*	*	2.5	2.0
PI207130-2-4	1	2	2	2	1.8		*	*	1.8	2.8
B7335-7-2-1-1	2	2	2	2	2.0		*	*	3.3	1.3
B7344-5-1-1	1	2	2	3	2.0		*	*	2.5	1.0
B7714/6-3	2	2	2	2	2.0		*	*	3.0	2.5
Medina	2	1	2	3	2.0		*	*	2.5	2.3
6230	2	2	2	3	2.3			*	2.3	2.5
6267	1	2	2	4	2.3			*	2.0	1.8
G122-3	1	2	3	4	2.5			*	3.5	3.3
H9658-9	2	2	3	3	2.5			*	2.0	2.3
L192	2	2	3	3	2.5			*	2.3	2.8
NY1-6020-4	2	2	4	2	2.5			*	1.5	2.3
NY1-6020-5	2	2	3	3	2.5			*	1.8	2.8
NY5972	2	1	3	4	2.5			*	2.5	2.0
NYBS6637	1	2	4	3	2.5			*	2.0	1.5
6256	1	2	3	4	2.5			*	2.5	2.3
Savannah	1	3	3	3	2.5			*	2.0	2.3
B7335-7-1-2-1	2	3	4	3	3.0			*	2.5	1.8
6238	3	2	3	4	3.0			*	2.5	2.5
PI290990-4-1	3	3	4	2	3.0			*	2.3	2.3
B7335-7-1-1-2	2	4	3	4	3.3			*	2.8	1.8
MO 162	3	4	2	4	3.3			*	2.8	3.0
6239	2	3	4	4	3.3			*	2.3	2.5
FR 266	2	2	6	4	3.5			*	1.3	2.3
B7354-6-2-1	5	2	4	4	3.8	^		*	2.5	1.5
6258	5	2	5	3	3.8	^		*	2.8	3.0
6263	4	3	3	5	3.8	^		*	2.8	2.5
6385	2	2	5	6	3.8	^		*	1.8	2.3
6392	2	4	5	4	3.8	^		*	2.0	2.0
Minuette	2	5	5	4	4.0	^		*	2.3	2.0
6249	4	4	4	4	4.0	^		*	2.0	2.8
6371	3	3	5	5	4.0	^		*	2.0	2.0
6381	2	4	6	4	4.0	^		*	2.5	2.0
6235	3	3	5	6	4.3	^		*	1.5	1.8
6281	4	3	5	5	4.3	^		*	2.0	1.8
B7321-5-1-2-1	5	3	5	5	4.5	^	^	*	2.3	1.3
6259	4	5	4	5	4.5	^	^	*	3.0	3.0
6279	4	4	5	5	4.5	^	^	*	2.0	2.5
6282	4	3	6	5	4.5	^	^	*	1.8	2.3
U225846	5	2	5	6	4.5	^	^	*	2.0	1.8
B7354-6-2-2	4	3	6	6	4.8	^	^	*	2.5	2.0

Table 10. Results from a white mold screening trial, Corvallis, 2005 (cont)[z].

Entry	White Mold Scores[y] Rep 1	Rep 2	Rep 3	Rep 4	Average White Mold Incidence[y]	White Mold Check Comparisons[x] G122	MO 162	91G	Growth Habit[w]	Estimated Yield[v]
6262	6	2	6	5	4.8	^	^	*	2.0	3.0
6278	4	4	6	5	4.8	^	^	*	1.8	2.3
6298	4	4	5	6	4.8	^	^	*	2.0	2.3
6386	4	6	3	6	4.8	^	^	*	2.0	2.0
6393	4	3	6	6	4.8	^	^	*	2.3	2.0
6245	4	4	6	6	5.0	^	^	*	1.5	2.5
6257	3	5	6	6	5.0	^	^	*	2.5	3.3
B7734-9-2-2-1	4	5	6	6	5.3	^	^	*	2.3	2.0
Ex Rico	5	4	6	6	5.3	^	^	*	1.3	3.3
6287	4	5	5	7	5.3	^	^	*	1.8	2.0
6283	5	6	6	5	5.5	^	^	*	1.8	2.0
6297	5	5	6	6	5.5	^	^	*	2.0	2.5
6346	7	5	4	6	5.5	^	^	*	2.3	2.0
5630	6	5	6	6	5.8	^	^		2.0	2.5
6288	5	6	6	6	5.8	^	^		1.5	2.5
6303	5	6	6	6	5.8	^	^		2.0	2.0
6241	5	7	5	7	6.0	^	^		2.0	2.3
6284	5	5	6	8	6.0	^	^		2.0	2.5
6290	6	6	6	6	6.0	^	^		2.0	2.3
6375	7	6	3	8	6.0	^	^		1.8	2.3
5613	6	7	6	6	6.3	^	^		1.5	2.0
6320	4	7	7	7	6.3	^	^		2.0	2.3
6330	6	7	5	7	6.3	^	^		2.0	2.3
6372	7	5	6	7	6.3	^	^		2.0	2.3
6300	6	7	6	7	6.5	^	^		1.0	2.3
6313	6	5	7	8	6.5	^	^		1.8	2.0
6315	7	5	7	7	6.5	^	^		2.0	2.5
6339	7	5	6	8	6.5	^	^		1.5	2.3
6345	6	7	7	6	6.5	^	^		1.8	2.3
6348	6	7	7	6	6.5	^	^		1.5	2.5
91G	6	6	7	8	6.8	^	^		1.5	2.5
5635	7	5	8	7	6.8	^	^		2.0	2.5
6243	7	5	8	7	6.8	^	^		2.3	2.0
6294	6	6	7	8	6.8	^	^		1.5	2.5
6312	7	8	6	6	6.8	^	^		1.8	2.0
6318	6	7	7	7	6.8	^	^		1.8	2.0
6323	6	7	6	8	6.8	^	^		1.5	2.3
6338	7	6	7	7	6.8	^	^		1.8	2.0
6337	8	5	7	8	7.0	^	^		1.5	2.3
6363	7	6	8	7	7.0	^	^		1.3	2.8
6383	7	6	7	8	7.0	^	^		1.5	2.0
6255	7	7	7	8	7.3	^	^		1.3	1.8
6327	7	7	7	8	7.3	^	^		1.0	2.5
6340	7	7	7	8	7.3	^	^		1.0	2.3
6347	7	7	8	7	7.3	^	^		1.3	2.5
6395	8	6	8	7	7.3	^	^		1.3	2.3

Table 10. Results from a white mold screening trial, Corvallis, 2005 (cont)[z].

Entry	White Mold Scores[y] Rep 1	Rep 2	Rep 3	Rep 4	Average White Mold Incidence[y]	White Mold Check Comparisons[x] G122	MO 162	91G	Growth Habit[w]	Estimated Yield[v]
6335	8	7	8	7	7.5	^	^		1.3	2.5
6342	8	7	7	8	7.5	^	^		1.8	2.3
6384	7	7	8	8	7.5	^	^		1.5	2.3
Ore 54	8	7	8	8	7.8	^	^		1.5	2.3
Spinel	8	8	8	8	8.0	^	^	^	1.3	2.5

[z]Planted June 27.
[y]Average scores based on LS means; 1-10 scale with 1 = low incidence; no symptoms observed and 10 = high incidence; all plants in plot dead.
[x]* indicates significantly better than this check ($p < 0.05$); ^ indicates significantly worse than this check ($p < 0.05$).
[w]Scores based on a 1-4 scale with 1 = prostrate and 4 = upright
[v]Scores based on a 0-4 scale with 0 = no yield and 4 = high yield.

Table 11. Comparison of white mold field averages, six years combined, Corvallis, 2005.

Entry	White Mold Field Score Averages[z] 2000	2001	2002	2003	2004	2005	Overall AV
B7344-5-1-1	1.5	2.3	3.5	1.0	2.5	2.0	2.1
L192	1.5	1.1	2.5	1.3	4.0	2.5	2.2
NYBS6637	1.3	1.8	3.8	1.7	2.3	2.5	2.2
NY2-5984-1	2.0	1.5	3.3	2.3	3.0	1.5	2.3
MO 162	1.0	1.1	3.3	3.3	2.8	3.3	2.5
PI290990-4-1	2.5	2.3	3.0	2.0	2.0	3.0	2.5
NY5972	1.3	1.6	3.3	2.7	3.8	2.5	2.5
NY1-6020-5	2.8	1.5	4.5	1.7	2.3	2.5	2.5
PI207130-2-4	1.5	2.4	4.0	3.0	2.8	1.8	2.6
B7354-6-2-2	1.0	1.0	3.3	1.7	4.0	4.8	2.6
B7354-6-2-1	1.3	1.8	2.3	1.3	5.8	3.8	2.7
NYBS6643	1.8	1.6	4.3	1.0	6.5	1.5	2.8
G122	2.0	1.5	4.0	2.0	5.8	2.5	3.0
B7335-7-2-1-1	2.0	1.4	4.5	3.7	4.3	2.0	3.0
H9658-9	2.0	2.1	4.5	4.3	3.0	2.5	3.1
NY1-6020-4	3.0	2.6	4.8	2.3	3.5	2.5	3.1
B7335-7-1-2-1	1.8	2.5	5.3	3.3	6.5	3.0	3.7
FR 266	3.8	2.3	6.0	1.7	6.8	3.5	4.0
B7335-7-1-1-2	2.5	1.9	5.0	4.7	6.8	3.3	4.0
B7321-5-1-2-1	3.0	1.8	5.3	5.0	5.8	4.5	4.2
B7334-9-2-2-1	2.0	1.4	4.5	3.7	9.3	5.3	4.3
Minuette	4.0	5.3	7.8	2.0	7.0	4.0	5.0
Ex Rico	5.0	4.1	7.0	4.3	7.3	5.3	5.5
5630	5.3	7.3	8.8	6.0	9.3	5.8	7.0
5613	6.8	6.5	9.0	6.0	10.0	6.3	7.4
5635	5.8	6.9	8.5	7.0	10.0	6.8	7.5
OR 54	7.5	6.8	9.0	6.0	10.0	7.8	7.8
91G	7.8	8.3	8.3	7.2	9.8	6.8	8.0
Grand AV	3.1	3.0	5.3	3.5	5.8	3.8	4.1
LSD @ .05	2.2	2.1	1.7	2.5	1.8	1.0	1.2

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

Table 12. Comparison of white mold field averages, two years combined, Corvallis, 2005.

Entry	White Mold Field Score Averages[z] 2004	2005	2 Year AV
Asher1DR	1.8		
PI290990-4-1	2.0	3.0	2.5
NY1-6020-5	2.3	2.5	2.4
NYBS6637	2.3	2.5	2.4
6229	2.5	1.5	2.0
76-110	2.5		
B7344-5-1-1	2.5	2.0	2.3
6230	2.8	2.3	2.5
MO 162	2.8	3.3	3.0
PI207130-2-4	2.8	1.8	2.3
H9658-9	3.0	2.5	2.8
NY2-5984-1	3.0	1.5	2.3
6265	3.3		
NY1-6020-4	3.5	2.5	3.0
NY5972	3.8	2.5	3.1
B7354-6-2-2	4.0	4.8	4.4
L192	4.0	2.5	3.3
6231	4.3		
6256	4.3	2.5	3.4
B7335-7-2-1-1	4.3	2.0	3.1
6268	4.5		
6239	5.8	3.3	4.5
B7321-5-1-2-1	5.8	4.5	5.1
B7354-6-2-1	5.8	3.8	4.8
G122	5.8	2.5	4.1
6235	6.0	4.3	5.1
225846	6.3		
B7335-7-1-2-1	6.5	3.0	4.8
NYBS6643	6.5	1.5	4.0
B7335-7-1-1-2	6.8	3.3	5.0
B7354-2-2-2-1	6.8		
FR 266	6.8	3.5	5.1
Minuette	7.0	4.0	5.5
Ex Rico	7.3	5.3	6.3
6286	7.5	5.3	6.4
B7356-4-2-1	7.5		
NY5773	8.5		
6252	9.0	4.0	6.5
5630	9.3	5.8	7.5
B7334-9-2-2-1	9.3	5.3	7.3
91G	9.8	6.8	8.3
OR 54	10.0	7.8	8.9
5613	10.0	6.3	8.1
5635	10.0	6.8	8.4
NY-15-161W	10.0		
LSD @ .05	1.8	1.0	2.2

[z]White mold scores: 1-10, 1 = no symptoms observed, 10 = all plants infected.

Table 13. Correlations among white mold and yield variables for a white mold field screening trial, Corvallis, 2005.

	Yield	Upright Habit
White Mold Scores	0.02^{ns}	-0.57***
Yield		-0.08^{ns}

***statistically significant at p<0.0001.

Table 14. LS means from a preliminary greenhouse white mold straw test for selected lines of a 91G x PI255956 BC_2F_2 population, Corvallis, June 2005[z].

Line	WM LS Means	Comparisons with Checks		
		G122	MO162	91G
G122	3.7		*	*
WMGx25-11	5.1	*		*
WMGx25-15	5.3	*		*
WMGx25-12	5.3	*		*
WMGx25-18	5.4	*		*
MO162	5.6	*		*
WMGx25-2	5.6	*		*
WMGx25-9	5.6	*		*
WMGx25-8	5.7	*		
WMGx25-10	5.8	*		
WMGx25-17	5.8	*		
WMGx25-5	6.0	*		
WMGx25-16	6.0	*		
WMGx25-4	6.1	*		
WMGx25-20	6.2	*		
WMGx25-14	6.2	*		
WMGx25-1	6.3	*		
WMGx25-19	6.3	*		
WMGx25-6	6.3	*		
WMGx25-7	6.4	*		
91G	6.5	*	*	
WMGx25-3	6.5	*		
WMGx25-13	7.3	*	*	

[z]*Phaseolus coccineus* x *Phaseolus vulgaris* interspecific cross.
*statistically significantly different from check variety at p<0.05.

Table 15. LS means for Area Under the Disease Progress Curve (AUDPC) from a greenhouse white mold straw test for 91G x PI255956 BC_2F_5 population, Corvallis, November 2005[z]

Line	AUDPC LS Mean	Comparison with Checks					
		G122	MO162	91G	5613	5630	Minuette
WMGx25 47-2	44.33	*	*	*	*	*	*
WMGx25 2-6	50.17		*	*	*	*	*
WMGx25 47-4	51.33		*	*	*	*	*
WMGx25 12-5	54.25		*	*	*	*	*
WMGx25 13-14	54.83		*	*	*	*	*
WMGx25 31-3	56.00		*	*	*	*	*
WMGx25 3-18	57.17		*	*	*	*	*
WMGx25 18-1	58.33		*	*	*	*	*
WMGx25 11-4	59.50		*	*	*	*	*
WMGx25 48-5	59.50		*	*	*	*	*
G122	60.08		*	*	*	*	*
WMGx25 46-6	60.67		*	*	*	*	*
WMGx25 2-3	61.83		*	*	*	*	*
WMGx25 27-1	61.83		*	*	*	*	*
WMGx25 33-2	61.83		*	*	*	*	*
WMGx25 26-3	63.00		*	*	*	*	*
WMGx25 35-1	63.00		*	*	*	*	*
WMGx25 3-15	64.17		*	*	*	*	*
WMGx25 40-3	65.33			*	*	*	*
WMGx25 45-2	65.33			*	*	*	*
WMGx25 23-18	66.50			*	*	*	*
WMGx25 6-2	66.50			*	*	*	*
WMGx25 6-3	68.83			*	*	*	*
WMGx25 12-3	70.00			*	*	*	*
WMGx25 3-3	70.00			*	*	*	*
WMGx25 10-4	71.17				*	*	*
WMGx25 13-11	71.17				*	*	*
WMGx25 25-1	71.17				*	*	*
WMGx25 45-3	71.17				*	*	*
WMGx25 6-9	71.17				*	*	*
WMGx25 1-11	72.33				*	*	*
WMGx25 19-5	72.33				*	*	*
WMGx25 21-1	72.33				*	*	*
WMGx25 23-8	72.33				*	*	*
WMGx25 31-6	72.33				*	*	*
WMGx25 42-3	72.33				*	*	*
WMGx25 27-13	73.50				*	*	*
WMGx25 41-2	73.50				*	*	*
WMGx25 50-5	73.50				*	*	*
WMGx25 19-10	74.67	*			*	*	*
WMGx25 20-3	75.83	*			*	*	*
WMGx25 28-4	75.83	*			*	*	*
WMGx25 43-1	75.83	*			*	*	*

Table 15 . LS Means for Area Under the Disease Progress Curve (AUDPC) from a greenhouse straw test for 91G x PI255956 BC_2F_5 population, Corvallis, November 2005 (cont)[z]

Line	LS Mean	Comparison with Checks					
		G122	MO162	91G	5613	5630	Minuette
WMGx25 21-5	77.00	*			*	*	*
WMGx25 3-2	77.00	*			*	*	*
WMGx25 46-5	77.00	*			*	*	*
WMGx25 50-4	77.00	*			*	*	*
WMGx25 2-5	78.17	*			*	*	*
WMGx25 36-1	78.17	*			*	*	*
WMGx25 40-6	78.17	*			*	*	*
MO162	79.33	*			*	*	*
WMGx25 29-9	80.50	*			*	*	*
WMGx25 8-2	80.50	*			*	*	*
WMGx25 13-8	81.67	*			*	*	*
WMGx25 35-7	81.67	*			*	*	*
WMGx25 42-1	81.67	*			*	*	*
WMGx25 48-3	81.67	*			*	*	*
WMGx25 7-8	81.67	*			*	*	*
WMGx25 8-3	81.67	*			*	*	*
WMGx25 20-2	82.83	*			*	*	*
WMGx25 40-1	84.00	*			*	*	*
WMGx25 44-3	84.00	*			*	*	*
WMGx25 49-2	84.00	*			*	*	*
91G	84.58	*			*	*	*
WMGx25 14-9	85.17	*			*	*	*
WMGx25 17-6	85.17	*			*	*	*
WMGx25 49-5	85.17	*			*	*	*
WMGx25 8-1	85.17	*			*	*	*
WMGx25 20-8	86.33	*			*	*	*
WMGx25 4-4	86.33	*			*	*	*
WMGx25 4-6	86.33	*			*	*	*
WMGx25 39-3	87.50	*			*	*	*
WMGx25 39-4	87.50	*			*	*	*
WMGx25 41-7	87.50	*			*	*	*
WMGx25 6-7	87.50	*			*	*	*
WMGx25 1-1	88.67	*			*	*	*
WMGx25 11-6	88.67	*			*	*	*
WMGx25 24-7	88.67	*			*	*	*
WMGx25 9-13	88.67	*			*	*	*
WMGx25 45-1	89.83	*			*	*	*
WMGx25 9-10	89.83	*			*	*	*
WMGx25 22-3	91.00	*					*
WMGx25 35-5	91.00	*			*	*	*
WMGx25 36-4	91.00	*			*	*	*
WMGx25 6-1	91.00	*			*	*	*
WMGx25 33-1	92.17	*			*	*	*
WMGx25 12-2	94.50	*	*		*	*	*

Table 15 . LS Means for Area Under the Disease Progress Curve (AUDPC) from a greenhouse straw test for 91G x PI255956 BC_2F_5 population, Corvallis, November 2005 (cont)[z]

Line	LS Mean	Comparison with Checks					
		G122	MO162	91G	5613	5630	Minuette
WMGx25 17-4	94.50	*	*		*	*	*
WMGx25 15-1	95.67	*	*			*	*
WMGx25 15-2	96.83	*	*				*
WMGx25 25-3	96.83	*	*				*
WMGx25 26-1	96.83	*	*				*
WMGx25 43-4	96.83	*	*				*
WMGx25 7-15	96.83	*	*				*
WMGx25 9-16	96.83	*	*				*
WMGx25 25-6	98.00	*	*				*
WMGx25 27-3	98.00	*	*				*
WMGx25 38-6	98.00	*	*				*
WMGx25 41-11	98.00	*	*				*
WMGx25 42-5	98.00	*	*				*
WMGx25 19-3	99.17	*	*	*			*
WMGx25 28-1	99.17	*	*	*			*
WMGx25 34-1	99.17	*	*	*			*
WMGx25 5-15	99.17	*	*	*			*
WMGx25 44-4	100.33	*	*	*			*
WMGx25 44-5	100.33	*	*	*			*
WMGx25 3-12	101.50	*	*	*			*
WMGx25 38-5	101.50	*	*	*			*
WMGx25 7-2	101.50	*	*	*			*
WMGx25 11-1	103.83	*	*	*			*
WMGx25 48-4	105.00	*	*	*			
WMGx25 24-1	106.17	*	*	*			
WMGx25 4-1	106.17	*	*	*			
WMGx25 43-3	107.33	*	*	*			
WMGx25 47-3	107.33	*	*	*			
OSU5613	109.08	*	*	*			
OSU5630	110.83	*	*	*			
WMGx25 50-3	110.83	*	*	*			
WMGx25 10-15	114.33	*	*	*			
WMGx25 31-1	115.50	*	*	*			
Minuette	118.42	*	*	*			

[z]*Phaseolus coccineus* x *Phaseolus vulgaris* interspecific cross. Lower LS Mean indicates higher level of resistance. *Statistically significantly different from check variety at p<0.05.

Table 16. LS means for a 91G x PI255956 BC_2F_4 population from a field white mold disease screening trial, Corvallis, 2005[z].

Family	LS Mean	Comparison to Check		
		G122	MO162	91G
WMGx25-15	3.0		*	*
WMGx25-48	3.0		*	*
G122	3.0		*	*
WMGx25-11	3.5			*
WMGx25-13	3.5			*
WMGx25-23	3.5			*
WMGx25-27	4.0			*
WMGx25-49	4.0			*
MO162	4.5	*		*
WMGx25-47	4.5	*		*
WMGx25-43	4.5	*		*
WMGx25-35	4.5	*		*
WMGx25-25	4.5	*		*
WMGx25-41	4.5	*		*
WMGx25-26	5.0	*		*
WMGx25-6	5.0	*		*
WMGx25-17	5.0	*		*
WMGx25-5	5.0	*		*
WMGx25-29	5.0	*		*
WMGx25-14	5.0	*		*
WMGx25-9	5.0	*		*
WMGx25-1	5.0	*		*
WMGx25-44	5.0	*		*
WMGx25-2	5.0	*		*
WMGx25-10	5.0	*		*
WMGx25-33	5.0	*		*
WMGx25-4	5.5	*		
WMGx25-45	5.5	*		
WMGx25-19	5.5	*		
WMGx25-16	5.5	*		
WMGx25-39	5.5	*		
WMGx25-38	5.5	*		
WMGx25-3	5.5	*		
WMGx25-21	5.5	*		
WMGx25-20	5.5	*		
WMGx25-36	6.0	*	*	
WMGx25-22	6.0	*	*	
WMGx25-7	6.0	*	*	
WMGx25-18	6.0	*	*	
WMGx25-34	6.5	*	*	

Table 16. LS means for a 91G x PI255956 BC_2F_4 population from a field white mold disease screening trial, Corvallis, 2005[z] (cont.).

Family	LS Mean	Comparison to Check		
		G122	MO162	91G
WMGx25-46	6.5	*	*	
WMGx25-42	6.5	*	*	
91G	6.8	*	*	
WMGx25-8	7.0	*	*	
WMGx25-37	7.0	*	*	
WMGx25-31	7.0	*	*	
WMGx25-12	8.0	*	*	
WMGx25-40	8.0	*	*	
WMGx25-28	8.0	*	*	
WMGx25-24	8.0	*	*	

[z]*Phaseolus coccineus* x *Phaseolus vulgaris* interspecific cross. Scale of 1 – 10 where 1 is highly resistant. *statistically significantly different from check variety at p<0.05.

Table 17. Correlations between white mold scores and yield variables for a 91G x PI255956 BC2F5 population from a field disease screening trial, Corvallis, 2005[z].

	Yield	Habit
WM	-0.15093[ns]	-0.6843***
Yield		0.32781**
Habit		

[z]*Phaseolus coccineus* x *Phaseolus vulgaris* interspecific cross. **Statistically significant 0.0001<p<0.01. ***Significant at p< 0.0001.

Table 18. Association of NY 6020 white mold resistance and molecular markers linked to resistance in Oregon Blue Lake breeding lines, Corvallis, 2005.

Genotype	SS18 1800[z]	C5 950[z]	AW9 1200[z]	Straw test 2005	Field test 2004	Field test 2003
NY6020-4	+	+	+	5.3	3.50	2.33
NY6020-5	+	+	+	4.6	2.25	1.67
OR 54	-	-	-	-	10.00	6.00
OR 91G	-	-	-	8.3	9.71	7.17
OR 5613	-	-	-	8.0	10.00	6.00
OR 5630	-	-	-	7.7	9.25	6.00
B7710 6-1	+	+	md	4.9	-	-
B7714 6-3	+	+	md	6.3	-	-
B7714 6-4	+	+	md	6.0	-	-
B7714 6-6	md	+	md	4.7	-	-
OSU 6229	+	+	+	5.5	2.50	1.67
OSU 6230	+	+	+	5.0	2.75	1.67
OSU 6231	+	+	+	4.5	3.00	1.67
OSU 6232	+	+	+	5.1	5.75	3.67
OSU 6235	+	+	+	5.1	6.00	2.33
OSU 6238	+	+	+	5.1	6.25	1.00
OSU 6241	+	+	+	8.0	-	5.00
OSU 6265	+	+	+	5.0	3.25	3.00
OSU 6266	-	-	-	7.1	8.00	4.00
OSU 6267	+	+	+	7.4	-	5.00
OSU 6268	+	+	+	7.5	4.50	1.67

[z]Presence (+) or absence (-) of molecular markers associated with a white mold resistance QTL (quantative trait locus) found in NY6020. Marker data supplied by Phil Miklas. md = not tested for this marker.

Figure 1. Commercial Bean $/A 2005 - Full Sieve Varieties

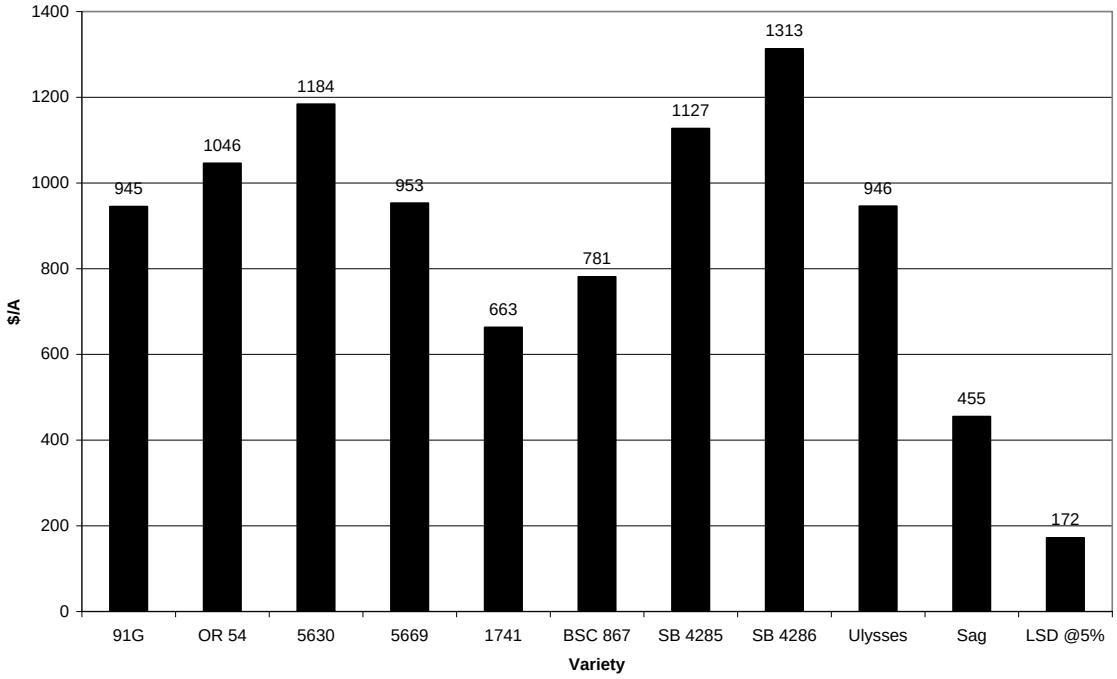


Figure 2. Commercial Bean $/A 2005 - Small Sieve Varieties

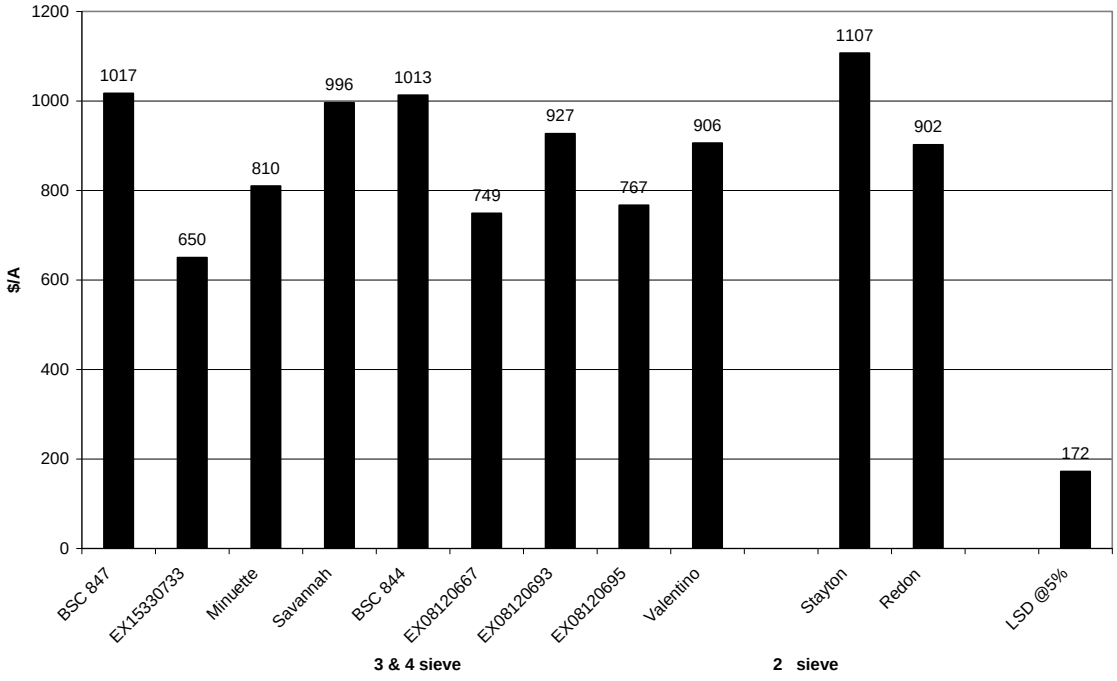
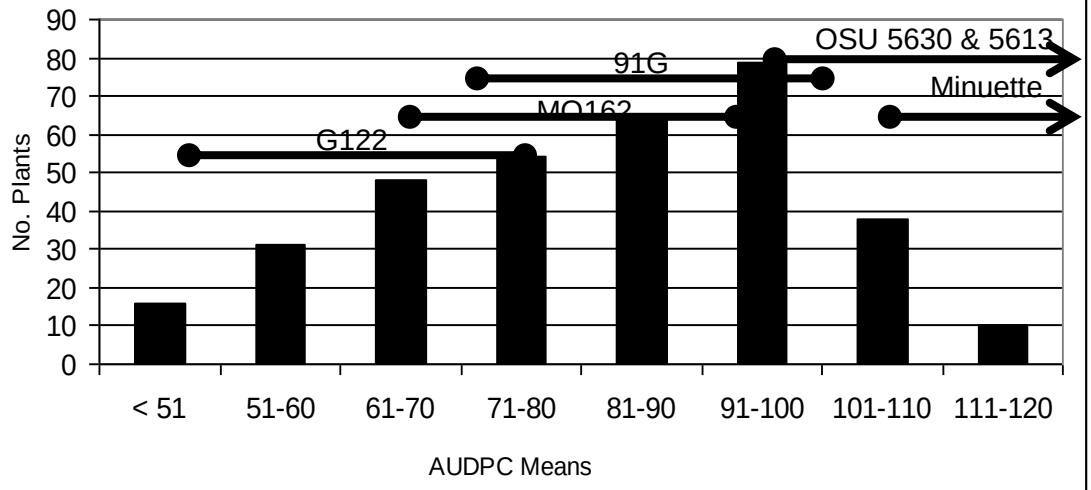


Figure 3. AUDPC LS means from a white mold greenhouse straw test for a 91G x PI 255956 BC_2F_5 Population, Corvallis, November, 2005.



Note: Horizontal bars indicate not significantly different from check.

Figure 4. 91G x PI 255956 population performance for white mold resistance in the field, 2005.