

**Report to the Oregon Processed Vegetable Commission  
2011–2012**

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, 2012
5. Project Funding:

\$39,088	breeding
\$11,233	processing
\$50,321	total

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

6. Objective: Breed improved Bush Blue Lake green bean varieties with:
  - a. White and gray mold resistance
  - b. Improved plant architecture
  - c. High economic yield
  - d. Improved pod quality (including straightness, color, smoothness, texture, flavor and quality retention, and delayed seed size development)
  - e. Tolerance to abiotic stresses

Improve seed quality of materials in the breeding program to provide greater resistance to mechanical injury and low germination issues.

7. Report of Progress:

*Overview of Project and Varietal Development:* In FY12, the focus remains on developing white mold resistant bush blue lake (BBL) green beans. Approximately 1100 breeding lines and populations at various stages of generation advance were grown in the field for evaluation and selection. In addition, we planted a white mold screening nursery and a root rot trial as well as growing and characterizing 151 snap bean varieties for the second year for the Bean CAP (USDA-NFIA) genomics project. We conducted one processing yield trial of OSU lines and one of mostly private company cultivars. Stock seed increase and roguing was conducted for four released cultivars and advanced lines including OSU 6443. In the case of the latter line, we are increasing seed with the idea of release in the next year if given the green light by the processing industry. At present, OSU 6443 is the only advanced line under consideration for release. There are a number of advanced selections that carry the NY6020 source of white mold resistance that are in

or nearing field testing and processing phase of evaluation. The first of these was grown in preliminary trials in 2011.

*Yield Trials:* We grew a preliminary yield trial consisting of 75 breeding lines and checks and a commercial trial that had 24 commercial breeding lines and varieties and three OSU breeding lines and checks. The trial of OSU lines was planted June 8. It contained 56 full sieve breeding lines, 12 small sieve (4 or 4-5 sieve) lines, and five checks (tables 1 and 2). During grading room evaluations, two lines were discarded due to possession of an oval pod cross-section. The first half of the season was very cool with normal summer temperatures only achieved after the middle of July. No significant split sets were encountered. We observed early season white mold in the Bean CAP trial but nothing of any significance in the yield/processing trials.

Six year average for selected OSU full sieve lines and checks							
Line	Adjusted T/A						Overall Avg.
	2006 <sup>z</sup>	2007 <sup>z</sup>	2008 <sup>z</sup>	2009 <sup>y</sup>	2010 <sup>y</sup>	2011 <sup>z</sup>	
OR 91G	12.1	8.7	9.5	7.7	12.7	13.4	10.1
OR 54	10.7	11.0	11.4	10.6	13.1	12.5	11.1
OSU 5630	12.8	11.9	11.4	10.9	13.8	13.9	12.1
6443	12.3	12.2	13.4	11.4	13.7	12.9	12.5
6494	10.0	13.3	12.5	6.4	12.5	13.7	11.1
LSD 0.05	2.8	2.2	3.2	2.5	NS	2.5	1.8

<sup>z</sup>Average of 2 trials per year, 2 reps per trial .

<sup>y</sup>Average of 3 reps; 1 trial only planted this year; NS=not significant.

In overall ranking, OSU 6502 and OSU 6792 had the highest adjusted T/A yield, but were not significantly higher than OR 54 and OR 91G. Overall, there were 23 checks and experimental lines in the top yielding

group. Among OSU small sieve lines, OSU 6772 had a higher yield than other four sieve lines. The text table above shows six year averages for three check cultivars and two advanced breeding lines. Both OSU 5630 and OSU 6443 rank the highest over six years and were significantly higher in yield than OR 91G. On average, OSU 5630 would yield 2.1 T/A more, and OSU 6443 2.4 T/A greater than OR 91G.

Starting with OSU 6682 and continuing through OSU 6799 in the preliminary yield and processing trial, these lines all have putative white mold resistance derived from NY6020. Many of these lines were derived from a second cycle of crossing and selection, and as a result, had a much higher level of BBL quality characteristics. Selection was carried out using the molecular markers for the WM<sub>8.1</sub> QTL (2008). This was then followed by a straw test in the greenhouse (2009) and two white mold screening trials in the field (2010-2011). One of the concerns with these lines has been that the white mold resistance donor parent is low yielding (NY6020-5 in this year's trial [table 1] yielded 5.9 T/A compared with 13.4 T/A for OR 91G), and a number of the progeny appear to be low yielding as well. Similar low yields have been found in dry beans where this source of resistance has been used. The question has been whether the gene controlling resistance also affects other plant traits (such as yield), or whether a gene or genes linked to resistance cause the low yield. If it is the latter case, then there is hope of breaking the linkage and obtaining lines which are high yielding and resistant. Yield trial data from 2011 (table 1) revealed 17 putatively resistant lines with yields that were not significantly different from the BBL check cultivars. Additional trials in a number of environments will be

required to verify these results. We did observe in the field that a number of the putative white mold resistant lines did have fewer flowers than the BBL checks, and this may be a potential mechanism by which white mold disease is limited – as well as the reason for lower yields. This observation needs to be explored further in the field in 2012.

Most experimental lines had adequate quality characteristics although a few had heart- or oval- shaped cross-sections (table 2).

*Commercial Green Bean Trial:* This trial was planted on June 24 and harvested during August 22 – August 31. The trial included eight full sieve green beans, 11 3-4 sieve green beans, one 4 sieve wax bean, five extra fine green beans and two Romano cultivars (tables 3 – 5, and figures 1 & 2). The BBL checks ranked highest in adjusted T/A with OSU 6443 leading the pack at 12.7 T/A (table 4, figure 1). Also in the top group and not significantly different from the others was Huntington. As has been observed in past years, smaller sieve classes were lower yielding.

*Processing and Quality Evaluation of Experimental Green Beans:* Sixty-four preliminary OSU breeding lines along with 91G, OR54, OSU 5630, Sahara, Savannah, and Cornell 501 as checks were processed in the 2010 OSU Preliminary Breeding Trial. In the Commercial Trial, twenty-three commercial selections were processed along with four checks: OR 91G, OSU 5630, OSU 6443, and Sahara.

All frozen samples will be displayed and evaluated by researchers the first week of January, 2012. The best of the OSU preliminary and advanced lines along with all the samples from the Commercial Trial will be displayed to the industry at the Northwest Food Processors Association meeting on January 16, 2012.

Though the data from the Research Evaluation does show how the new lines are doing and which crosses are the most promising, the low number of evaluators does not lead to statistically significant analyses of the results.

*White Mold Resistance Breeding:* Conditions were very favorable for white mold during the latter part of the season, and we evaluated 71 experimental breeding lines, seven *P. coccineus* derived germplasm lines, seven susceptible checks and five partially resistant checks (table 6). Disease incidence and severity were evaluated, and we also calculated an index based on the geometric mean of incidence and severity to provide a single value to rate disease. The lines were then ranked by geometric index (smaller numbers indicate higher levels of resistance). Cornell 501 and NY6020-5, L192 and G122 were all in the most resistant group along with 15 experimental lines (essentially those with a geometric index of 30 or less, table 7).

Table 7 provides a summary of selected experimental lines and checks for pedigree, yield, percent 1-4 sieve size, maturity, white mold parameters and basal stem diameter. Yield and disease data were collected in separate experiments, so there should be no “cause and effect” relationship among the parameters representing these characteristics. Stem diameter showed a negative correlation ( $r=-0.62^{***}$ ) with geometric index, suggesting that stem diameter may be another component of resistance. Yield and geometric index were positively correlated ( $r=0.41^{***}$ ), providing evidence for this trend previously observed with NY6020 sources of resistance of more resistant lines having lower yields. Bucking this trend were two high yielding experimental lines (OSU 6743 and

OSU 6792) that also had high levels of resistance. This suggests that the association between low yield and resistance can be broken. It does not appear that the intermediate source of resistance makes a difference; both sources trace back to NY6020, although through different intermediate lines: OSU 6230 in the case of OSU 6743 and OSU 6268 for OSU 6792. These data provide one of our most detailed examinations of white mold resistance in snap beans to date, and confirm the complexity of the trait.

Approximately half of the low yielding lines will be eliminated from next year's trials, to be replaced by new putatively resistant breeding lines awaiting evaluation.

*Root Rot Nursery:* A population consisting of 169 recombinant inbred lines, five resistant checks, and one susceptible check was screened in our root rot plots for the second year. Significant differences were observed among lines, but correlation between 2010 and the 2011 trials was relatively low highly significant ( $r=0.26^{***}$ ). We are developing a greenhouse screen based in virulent isolates derived from our test plots to increase the accuracy of screening. The phenotypic data generated from this population will be combined with genotypic data to construct a linkage map and identify factors for resistance.

#### Summary:

Approximately 1100 lines were advanced in the green bean early generation nursery. Another 75 experimental lines were evaluated for productivity and quality in a preliminary trial, and 27 cultivars and lines from commercial sources were evaluated for the same set of traits. Optimal disease pressure in our white mold evaluation trial provided data on performance of advanced breeding lines, and several of these show promise in terms of quality, productivity, and disease resistance. Another year of trialing will be needed to validate the performance observed this year, two to three years additional trialing will be required before release. The advanced line OSU 6443 continues to show consistently high yields and should be evaluated for release.

**Table 1. Performance of preliminary green bean lines, June 8 planting, Corvallis, 2011. Lines with adjusted T/A yields in the top group are highlighted.<sup>z</sup>**

Line	Days to Harvest	Est. Sieve Size	Stand	Percent Sieve Size <sup>y</sup>							1-4 Sieve	Av Tons/Acre	Av Adj Tons/Acre <sup>x</sup>
				1.0	2.0	3.0	4.0	5.0	6.0				
OR54	69	6	150	3.0	5.3	12.9	31.1	40.9	6.8	52.3	12.3	12.5	
91G	65	6	150	6.8	6.8	13.6	37.9	29.5	5.3	65.2	11.7	13.4	
5630	65	6	150	7.0	8.6	15.6	42.2	24.2	2.3	73.4	11.3	13.9	
6235	69	5	150	6.1	8.5	14.6	45.1	23.2	2.4	74.4	7.3	9.0	
6443	70	6	150	0.7	3.6	12.9	37.4	37.4	7.9	54.7	12.3	12.9	
6494	70	6	150	5.0	6.4	14.3	32.1	37.9	4.3	57.9	12.6	13.6	
6502	69	6	150	2.7	6.0	14.0	36.7	38.0	2.7	59.3	13.3	14.4	
6682	63	4	150	3.8	11.4	24.1	48.1	12.7	0.0	87.3	7.2	7.1	
6685	63	5	150	4.0	9.9	15.8	55.4	14.9	0.0	85.1	9.5	12.8	
6686	65	4	150	4.0	5.9	14.9	59.4	15.8	0.0	84.2	9.3	9.2	
6688	65	6	150	5.8	6.8	12.6	23.3	38.8	12.6	48.5	9.5	9.4	
6693	64	6	150	5.5	10.0	19.1	40.0	21.8	3.6	74.5	10.0	12.5	
6697	68	6	150	1.6	2.4	5.6	35.5	48.4	6.5	45.2	11.5	10.9	
6703	64	5	150	6.0	9.0	16.4	38.8	22.4	7.5	70.1	6.2	7.4	
6704	65	6	150	2.4	4.8	16.7	40.5	32.1	3.6	64.3	8.5	9.6	
6705	65	6	150	3.4	8.6	17.2	34.5	29.3	6.9	63.8	5.5	6.2	
6706	65	6	150	2.7	4.5	10.8	31.5	37.8	12.6	49.5	10.0	10.0	
6707	61	5	150	4.3	6.5	13.0	31.5	26.1	18.5	55.4	8.6	9.0	
6711	65	6	150	3.8	6.4	12.8	38.5	30.8	7.7	61.5	7.5	8.4	
6712	64	4-5	150	2.5	5.1	12.7	59.5	20.3	0.0	79.7	7.5	7.5	
6715	65	6	150	4.2	8.4	15.8	40.0	25.3	6.3	68.4	8.7	10.3	
6718	65	6	150	5.4	8.1	13.5	45.9	25.7	1.4	73.0	6.8	8.3	
6721	63	4	150	7.6	16.5	25.3	34.2	16.5	0.0	83.5	6.5	6.5	
6733	68	5	150	6.4	7.7	16.7	35.9	25.6	7.7	66.7	7.1	8.3	
6743	68	6	150	5.0	6.7	9.2	23.3	40.0	15.8	44.2	11.1	10.5	
6744	70	6	150	4.5	6.7	7.9	19.1	39.3	22.5	38.2	8.6	7.6	
6745	63	6	150	3.0	6.1	8.1	19.2	43.4	20.2	36.4	9.3	8.0	
6746	63	6	150	2.7	3.5	7.1	19.5	43.4	23.9	32.7	10.2	8.4	
6748	65	5	150	4.4	4.4	9.9	44.0	34.1	3.3	62.6	8.2	9.2	
6750	65	4	150	7.4	16.7	27.8	44.4	3.7	0.0	96.3	5.4	5.4	
6758	66	6	150	5.1	7.7	11.5	25.6	34.6	15.4	50.0	7.2	7.2	
6759	68	4	150	5.9	8.9	17.8	53.5	13.9	0.0	86.1	9.1	9.1	
6760	66	6	150	4.4	8.0	15.0	32.7	33.6	6.2	60.2	10.0	11.0	
6761	63	6	150	6.3	8.4	16.8	33.7	28.4	6.3	65.3	8.2	7.7	
6762	64	6	150	1.0	4.1	9.3	22.7	39.2	23.7	37.1	8.8	7.6	
6763	66	6	150	2.8	4.7	9.3	24.3	29.9	29.0	41.1	9.5	8.6	
6764	64	5	150	8.1	14.9	18.9	31.1	21.6	5.4	73.0	6.6	8.0	
6765	65	6	150	2.6	5.1	10.3	51.3	28.2	2.6	69.2	7.4	8.8	
6766	66	5	150	3.6	8.3	16.7	42.9	23.8	4.8	71.4	7.7	9.3	
6767	65	5	150	5.1	9.2	21.4	43.9	16.3	4.1	79.6	8.8	11.4	
6768	65	6	150	2.1	5.3	16.8	44.2	29.5	2.1	68.4	8.7	10.3	
6769	65	6	150	3.9	8.8	21.6	41.2	22.5	2.0	75.5	9.2	11.6	
6771	68	5	150	1.9	3.9	7.8	42.7	40.8	2.9	56.3	9.0	9.6	
6772	65	4-5	150	3.5	8.0	21.2	51.3	15.9	0.0	84.1	10.4	10.4	
6773	64	6	150	5.3	4.4	14.0	42.1	30.7	3.5	65.8	10.5	12.2	
6774	68	6	145	3.1	6.9	13.1	30.0	37.7	9.2	53.1	11.6	11.9	
6775	63	5	147.5	6.2	12.3	22.2	37.0	18.5	3.7	77.8	7.8	9.9	

**Table 1. Performance of preliminary green bean lines, June 8 planting, Corvallis, 2011 (cont).<sup>z</sup>**

Line	Days to Harvest	Est. Sieve Size	Stand	Percent Sieve Size <sup>y</sup>							1-4 Sieve	Av Tons/Acre	Av Adj Tons/Acre <sup>x</sup>
				1.0	2.0	3.0	4.0	5.0	6.0				
6776	65	6	133.5	2.0	6.1	17.3	33.7	30.6	10.2	59.2	9.6	10.4	
6777	65	5	150	2.2	8.7	28.3	53.3	7.6	0.0	92.4	8.4	11.9	
6778	61	4	150	4.4	10.3	19.1	52.9	13.2	0.0	86.8	6.5	6.5	
6779	64	5	150	5.8	9.3	20.9	45.3	17.4	1.2	81.4	8.2	10.7	
6781	70	6	140	4.3	6.5	13.0	32.6	34.8	8.7	56.5	8.9	9.5	
6782	64	4-5	150	5.6	10.0	24.4	51.1	8.9	0.0	91.1	8.3	8.3	
6783	68	5	150	2.9	6.7	14.3	41.0	33.3	1.9	64.8	9.6	11.0	
6784	63	6	150	6.8	9.5	13.5	28.4	35.1	6.8	58.1	7.2	7.7	
6785	66	4-5	150	2.9	5.8	20.4	52.4	18.4	0.0	81.6	9.3	9.3	
6787	68	5	150	3.2	3.2	5.6	44.0	42.4	1.6	56.0	11.4	12.1	
6788	65	5	150	5.9	7.9	17.8	49.5	16.8	2.0	81.2	9.2	12.1	
6789	64	6	150	4.4	7.8	13.3	25.6	40.0	8.9	51.1	8.5	8.5	
6790	65	6	150	5.4	10.8	17.6	35.1	27.0	4.1	68.9	6.7	8.0	
6791	68	5	150	4.3	7.7	22.2	41.9	23.9	0.0	76.1	10.5	13.2	
6792	69	6	150	2.1	3.5	11.1	44.4	37.5	1.4	61.1	13.4	14.9	
6793	65	6	150	2.3	6.8	18.2	42.0	27.3	3.4	69.3	8.3	9.8	
6794	68	6	150	5.1	6.8	16.1	39.8	30.5	1.7	67.8	10.6	12.5	
6795	66	6	150	4.4	6.1	13.2	35.1	33.3	7.9	58.8	10.8	11.8	
6796	63	5	150	4.8	7.7	17.3	39.4	28.8	1.9	69.2	9.6	11.4	
6797	64	6	150	5.4	8.1	14.9	32.4	35.1	4.1	60.8	6.8	7.5	
6798	65	4	150	2.3	4.5	15.9	56.8	18.2	2.3	79.5	8.1	8.1	
6799	68	4	150	4.9	7.4	17.3	58.0	12.3	0.0	87.7	7.3	7.3	
Cornell 501	68	4-5	150	2.3	4.5	13.6	56.8	22.7	0.0	77.3	8.3	8.3	
NY6020-5	64	5	141	3.7	9.3	16.7	37.0	33.3	0.0	66.7	5.1	5.9	
Sahara	66	4	150	6.8	12.6	35.0	43.7	1.9	0.0	98.1	9.3	9.3	
Savannah	69	4	150	8.8	16.7	39.2	34.3	1.0	0.0	99.0	9.4	9.4	
LSD 0.05											2.2	2.5	

<sup>z</sup>Mean of 2 replications; subplots of 5' were harvested from 20' plots in rows 30" apart.

<sup>y</sup>Percent calculated as % of total of 1-6 sieve beans.

<sup>x</sup>Tons/Acre adjusted to 50% 1-4 sieve for full and 5 sieve beans; yields for small sieve lines not adjusted.

**Table 2. Notes on preliminary green bean lines, June 8 planting, Corvallis, 2011.**

Line	Pod Length (cm)	Pod Straight -ness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smooth -ness <sup>x</sup>	Pod Color <sup>w</sup>	Flavor Sweet -ness	Flavor Astrin-gency	Flavor Perfu-miness	Notes
OR54	16.0	7	round	7	5	7	8	1	
91G	16.0	5	round	5	5	7	7	1	
5630	16.0	5	round	5	5	7	8	1	
6235	14.0	7	round-cb	7	4	7	7	3	
6443	16.0	6	round	5	5	8	6	1	
6494	15.0	5	round	6	5	8	7	1	
6502	16.0	7	round	6	5	8	5	1	Nice Bush Blue Lake type.
6682	10.5	5	round	7	4	7	5	3	Very short bean.
6685	15.5	7	round	7	3	5	7	1	Long slender pods. Very light green color.
6686	12.5	9	round	4	4	5	7	9	
6688	14.5	5	heart	5	4	7	5	3	
6693	16.5	5	heart-oval	5	4	7	5	7	Strong oval tendency.
6697	13.5	7	round	5	4	8	7	1	Short beans on a plant with nice habit. Was easily picked from the plant in the field.
6703	11.0	5	round	1	3	7	1	9	Indeterminate plant habit.
6704	13.0	5	round-cb	5	5	7	7	1	Pods are short for a full sieve bean.
6705	11.0	7	round-cb	5	5	7	5	1	Mix of stubby early and longer later maturing material.
6706	13.5	5	cb	5	5	7	7	5	Pods fairly short and very creasebacked in cross section.
6707	13.5	7	cb	5	5	5	7	1	Short beans with a reverse curve.
6711	14.5	7	round	7	5	4	8	1	Attractive pods.
6712	12.5	6	round	7	4	7	7	3	Many pods two tones of green. Seed set resulted in polywogs and blank pods. May be a seed mix with a lighter colored earlier maturing line.
6715	15.0	5	heart	5	4	7	7	1	Long slender pods that are heart shaped in cross section.

**Table 2. Notes on preliminary green bean lines, June 8 planting, Corvallis, 2011 (cont).**

Line	Pod Length (cm)	Pod Straight -ness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smooth -ness <sup>x</sup>	Pod Color <sup>w</sup>	Flavor Sweet -ness	Flavor Astrin-gency	Flavor Perfu-miness	Notes
6721	12.0	7	heart	8	7	7	7	1	
6733	14.0	7	heart-round	5	6	7	9	1	Tendency for larger sieve beans to be short and crease-back in cross section.
6743	19.5	3	round	3	5	7	7	1	Extremely long pods.
6744	16.0	3	round-cb	3	5	7	7	3	Pods rough in appearance.
6745	13.5	6	round-cb	7	5	7	7	1	
6746	14.0	5	cb	3	5	7	7	1	Pods very crease-back in cross section, to the point of grading out inaccurately.
6748	13.0	7	round	7	4	1	7	1	May be a mix of a short early 4 sieve and a later darker green full sieve type.
6750	11.5	8	round	9	4	5	7	1	Attractive bean, though low yielding.
6758	14.0	5	round-cb	5	5	7	7	1	Pods become crease-back as they reach 6 sieve.
6759	13.5	7	heart	5	4	5	7	1	Tendency toward oval pods.
6760	14.0	3	round-cb	3	5	5	7	3	Strong reverse curve in 6 sieve beans.
6761	16.0	5	round	7	4	3	7	7	Strange flavor.
6762	15.0	3	round-cb	3	5	3	7	1	Pods too rough and have a strong reverse curve.
6763	16.0	3	round-cb	1	5	7	7	1	Does not grade accurately because of crease back shape. Also has a strong reverse curve.
6764	12.0	3	round	7	5	5	7	3	Many pods with a reverse curve.
6765	13.5	9	round	7	4	5	7	1	
6766	13.0	8	round	7	4	5	7	1	Nice straight pods, though light in color.
6767	14.0	7	round	7	5	7	9	3	Intense, good flavor.
6768	14.0	7	round	7	5	5	7	3	Very uniform and attractive Bush Blue Lake type.
6769	16.0	8	round	8	5	7	7	1	Nice Bush Blue Lake type.



**Table 2. Notes on preliminary green bean lines, June 8 planting, Corvallis, 2011 (cont).**

Line	Pod Length (cm)	Pod Straight-ness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smoot h-ness <sup>x</sup>	Pod Color <sup>w</sup>	Flavor Sweet-ness	Flavor Astrin-gency	Flavor Perfu-miness	Notes
6771	13.0	6	round-heart	5	5	7	7	1	Segregating for heart shaped and oval pods.
6773	16.5	5	round-cb	5	5	7	7	1	Long Bush Blue Lake type.
6774	17.0	5	round	5	7	5	7	1	Very attractive long, dark green bean.
6775	12.5	5	round-cb	5	5	7	7	1	
6776	15.0	7	heart	7	4	7	5	9	Very attractive bean, but heart shaped in cross section.
6777	15.0	9	heart	9	7	3	9	1	
6778	12.0	7	oval	9	3	3	9	5	Strange flavor and many oval pods.
6779	13.0	8	round	7	5	9	7	1	Overall very attractive bean with good flavor.
6781	16.0	5	round	5	4	7	7	7	Light in color.
6782	11.0	8	round	7	5	3	5	1	Attractive bean.
6783	12.5	7	round	4	5	7	7	1	Short but fairly nice bean.
6784	13.0	5	heart-round	3	5	5	7	1	Strong reverse curve.
6785	13.0	8	round	7	5	7	7	3	Attractive bean
6787	13.5	6	round	5	6	7	5	1	Somewhat short, fairly uniform pods with good color.
6788	14.5	5	round	7	4	7	9	1	Strong crease-back in 6 sieve pods.
6789	14.0	5	round-cb	3	6	7	7	1	
6790	14.5	3	round-cb	5	4	3	7	3	Soapy flavor.
6791	15.0	1	heart	7	3	7	7	7	Extreme reverse curve in the pods, especially in lower sieve sizes, some show 180 degree curl.
6792	16.0	8	round	7	5	5	5	1	Excellent appearance, very straight, uniform.

**Table 2. Notes on preliminary green bean lines, June 8 planting, Corvallis, 2011 (cont).**

Line	Pod Length (cm)	Pod Straight - ness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smooth - ness <sup>x</sup>	Pod Color <sup>w</sup>	Flavor Sweet -ness	Flavor Astrin- gency	Flavor Perfu- miness	Notes
6793	12.0	8	round- cb	7	5	7	7	1	Pods short for a full sieve bean
6794	16.5	5	round	5	4	7	7	1	Long pods, light in color.
6795	15.0	7	heart	5	5	7	7	5	Oval tendency in 3 sv, higher sieve sizes more round.
6796	13.0	5	round	7	4	3	7	3	
6797	15.0	8	round	5	5	7	7	1	Long attractive bean.
6798	12.5	8	round	5	5	7	7	1	Short, early maturing, 4 sieve bean.
6799	10.0	9	round	7	5	7	7	1	Strings present.
Cornell 501	14.0	7	round	5	3	7	7	3	
NY6020-5	14.0	7	round	5	4	7	5	3	
Sahara	13.0	9	round	9	6	7	7	1	
Savannah	14.0	8	round	7	6	7	5	1	

<sup>z</sup>Scores based on a 1-9 scale with 9 straightest pods.

<sup>y</sup>Cross section: cb = crease-back.

<sup>x</sup>Scores based on a 1-9 scale with 9 smoothest pods.

<sup>w</sup>Scores based on a 1-9 scale with 9 darkest pods.

**Table 3. Performance of commercial green bean varieties, June 24 planting, Corvallis, 2011.**

Variety	Source	AV Stand	Intended Use	Days	Percent Sieve Size <sup>z</sup>							Tons/Acre Sieve Size						
					1	2	3	4	5	6	1-4	1	2	3	4	5	6	Graded Total <sup>y</sup>
5402	OSU (ck)	150	full	63	7.0	11.2	19.5	35.3	24.2	2.8	73.0	0.65	1.04	1.83	3.31	2.26	0.26	9.35*
				66	4.0	6.5	12.6	29.1	41.7	6.0	52.3	0.35	0.57	1.09	2.52	3.61	0.52	8.66
6443	OSU	150	full	63	5.9	10.1	19.0	34.2	27.0	3.8	69.2	0.61	1.04	1.96	3.52	2.78	0.39	10.31*
				66	4.3	6.5	13.8	30.2	38.4	6.9	54.7	0.44	0.65	1.39	3.05	3.87	0.70	10.09
91G	OSU (ck)	150	full	60	12.4	15.2	23.6	31.5	15.7	1.7	82.6	0.96	1.17	1.83	2.44	1.22	0.13	7.74
				62	5.0	6.9	14.7	29.8	38.5	5.0	56.4	0.48	0.65	1.39	2.83	3.65	0.48	9.48*
				66	3.4	3.4	6.7	19.3	52.9	14.3	32.8	0.35	0.35	0.70	2.00	5.48	1.48	10.35
Huntington	Syngenta	150	full	61	12.1	19.8	25.3	34.1	8.8	0.0	91.2	0.96	1.57	2.00	2.70	0.70	0.00	7.92
				64	7.3	9.2	19.9	36.4	25.2	1.9	72.8	0.65	0.83	1.78	3.26	2.26	0.17	8.96
				66	4.7	7.1	14.2	32.7	38.9	2.4	58.8	0.44	0.65	1.31	3.00	3.57	0.22	9.18*
FIVC6-0999	Seminis	150	5	59	4.7	7.7	18.9	48.5	20.1	0.0	79.9	0.35	0.57	1.39	3.57	1.48	0.00	7.35
				60	4.3	6.4	18.6	46.4	23.6	0.7	75.7	0.26	0.39	1.13	2.83	1.44	0.04	6.09*
				62	2.8	4.1	9.7	38.6	42.1	2.8	55.2	0.17	0.26	0.61	2.44	2.65	0.17	6.31
FIVC6-1001	Seminis	147	5	60	10.4	17.0	25.2	37.8	9.6	0.0	90.4	0.61	1.00	1.48	2.22	0.57	0.00	5.87
				62	7.6	9.7	21.5	41.7	18.1	1.4	80.6	0.48	0.61	1.35	2.61	1.13	0.09	6.26
				64	4.0	6.0	14.7	40.7	30.0	4.7	65.3	0.26	0.39	0.96	2.65	1.96	0.30	6.53*
FORC6-0954	Seminis	150	5	59	7.3	11.9	23.2	37.7	19.9	0.0	80.1	0.48	0.78	1.52	2.48	1.31	0.00	6.57
				61	4.8	4.8	13.7	37.7	35.6	3.4	61.0	0.30	0.30	0.87	2.39	2.26	0.22	6.35*
				63	3.0	3.7	9.8	32.3	43.3	7.9	48.8	0.22	0.26	0.70	2.31	3.09	0.57	7.13
SB4481	Syngenta	150	5	59	5.0	10.7	20.7	43.6	19.3	0.7	80.0	0.30	0.65	1.26	2.65	1.17	0.04	6.09
				61	3.0	4.9	11.0	37.2	39.6	4.3	56.1	0.22	0.35	0.78	2.65	2.83	0.30	7.13*
				63	3.4	3.4	8.5	34.5	45.8	4.5	49.7	0.26	0.26	0.65	2.65	3.52	0.35	7.70
Dynasty	Brotherton	150	4-5	63	8.2	17.6	51.8	21.2	1.2	0.0	98.8	0.61	1.31	3.83	1.57	0.09	0.00	7.40
				65	5.1	11.5	41.0	41.0	1.3	0.0	98.7	0.35	0.78	2.78	2.78	0.09	0.00	6.78*
				68	10.8	16.6	29.3	42.0	1.3	0.0	98.7	0.74	1.13	2.00	2.87	0.09	0.00	6.83
Sahara	Harris Moran (ck)	150	4-5	62	10.4	18.7	37.8	32.6	0.5	0.0	99.5	0.87	1.57	3.18	2.74	0.04	0.00	8.40
				64	6.0	9.0	31.0	52.0	2.0	0.0	98.0	0.52	0.78	2.70	4.52	0.17	0.00	8.70*
				66	3.3	4.7	20.3	66.0	5.7	0.0	94.3	0.30	0.44	1.87	6.09	0.52	0.00	9.22
F19	Pure Line	150	4-5	60	17.1	21.2	37.0	24.7	0.0	0.0	100.0	1.09	1.35	2.35	1.57	0.00	0.00	6.35
				62	7.4	11.1	31.5	48.8	1.2	0.0	98.8	0.52	0.78	2.22	3.44	0.09	0.00	7.05*
				64	3.4	6.8	22.7	56.3	10.8	0.0	89.2	0.26	0.52	1.74	4.31	0.83	0.00	7.66

**Table 3. Performance of commercial green bean varieties, June 24 planting, Corvallis, 2011 (cont).**

Variety	Source	AV Stand	Intended Use	Days	Percent Sieve Size <sup>z</sup>							Tons/Acre Sieve Size						
					1	2	3	4	5	6	1-4	1	2	3	4	5	6	Graded Total <sup>y</sup>
FIVC6-0998	Seminis	150	4-5	64	3.9	5.6	16.7	44.4	27.8	1.7	70.6	0.30	0.44	1.31	3.48	2.18	0.13	7.83
				66	2.7	3.3	10.9	36.1	42.6	4.4	53.0	0.22	0.26	0.87	2.87	3.39	0.35	7.96
				59	7.6	15.9	29.4	42.9	4.1	0.0	95.9	0.57	1.17	2.18	3.18	0.30	0.00	7.40
				61	5.6	5.6	17.9	50.8	20.0	0.0	80.0	0.48	0.48	1.52	4.31	1.70	0.00	8.48*
SB4515	Syngenta	150	4-5	63	2.4	4.2	11.3	46.4	34.5	1.2	64.3	0.17	0.30	0.83	3.39	2.52	0.09	7.31
				59	9.8	15.8	33.8	36.8	3.8	0.0	96.2	0.57	0.91	1.96	2.13	0.22	0.00	5.79
				61	9.2	9.8	21.6	45.1	14.4	0.0	85.6	0.61	0.65	1.44	3.00	0.96	0.00	6.66*
SB4556	Syngenta	150	4-5	63	3.6	9.5	22.0	45.2	19.6	0.0	80.4	0.26	0.70	1.61	3.31	1.44	0.00	7.31
				61	12.0	23.4	29.3	31.5	3.8	0.0	96.2	0.96	1.87	2.35	2.52	0.30	0.00	8.00
				63	7.1	13.7	25.3	37.9	15.4	0.5	84.1	0.57	1.09	2.00	3.00	1.22	0.04	7.92*
WAV606	Brotherton	150	4	66	3.5	6.9	14.5	38.7	34.7	1.7	63.6	0.26	0.52	1.09	2.91	2.61	0.13	7.53
				59	15.7	22.9	45.1	16.3	0.0	0.0	100.0	1.04	1.52	3.00	1.09	0.00	0.00	6.66
				61	9.3	18.0	50.6	22.1	0.0	0.0	100.0	0.70	1.35	3.78	1.65	0.00	0.00	7.48*
BSC854	Brotherton	150	3-4	63	5.2	14.1	51.3	29.3	0.0	0.0	100.0	0.44	1.17	4.26	2.44	0.00	0.00	8.31
				60	11.8	17.8	41.4	29.0	0.0	0.0	100.0	0.87	1.31	3.05	2.13	0.00	0.00	7.35*
				62	9.2	15.0	36.6	37.9	1.3	0.0	98.7	0.61	1.00	2.44	2.52	0.09	0.00	6.66
HS646	Brotherton	150	3-4	64	5.3	12.7	41.3	40.0	0.7	0.0	99.3	0.35	0.83	2.70	2.61	0.04	0.00	6.53
				59	19.7	28.0	34.8	16.7	0.8	0.0	99.2	1.13	1.61	2.00	0.96	0.04	0.00	5.74
				61	10.4	20.1	36.0	31.1	2.4	0.0	97.6	0.74	1.44	2.57	2.22	0.17	0.00	7.13*
BSC8609	Brotherton	150	3	63	4.9	13.8	36.0	41.8	3.6	0.0	96.4	0.48	1.35	3.52	4.09	0.35	0.00	9.79
				61	20.0	52.4	27.6	0.0	0.0	0.0	100.0	1.26	3.31	1.74	0.00	0.00	0.00	6.31
				62	18.6	52.6	28.8	0.0	0.0	0.0	100.0	1.26	3.57	1.96	0.00	0.00	0.00	6.78*
Kendo	Brotherton	150	3	64	13.6	54.8	31.6	0.0	0.0	0.0	100.0	1.04	4.22	2.44	0.00	0.00	0.00	7.70
				60	23.2	60.1	16.7	0.0	0.0	0.0	100.0	1.39	3.61	1.00	0.00	0.00	0.00	6.00
				62	16.7	59.4	23.9	0.0	0.0	0.0	100.0	1.00	3.57	1.44	0.00	0.00	0.00	6.00*
GB11	Pure Line	146	2-3	64	12.2	59.1	27.8	0.9	0.0	0.0	100.0	0.61	2.96	1.39	0.04	0.00	0.00	5.00
				59	44.1	54.9	1.0	0.0	0.0	0.0	100.0	1.96	2.44	0.04	0.00	0.00	0.00	4.44
				62	23.2	71.4	5.4	0.0	0.0	0.0	100.0	1.70	5.22	0.39	0.00	0.00	0.00	7.31*
				64	14.2	76.8	8.9	0.0	0.0	0.0	100.0	1.17	6.35	0.74	0.00	0.00	0.00	8.27

**Table 3. Performance of commercial green bean varieties, June 24 planting, Corvallis, 2011 (cont).**

Variety	Source	AV Stand	Intended Use	Days	Percent Sieve Size <sup>z</sup>							Tons/Acre Sieve Size						
					1	2	3	4	5	6	1-4	1	2	3	4	5	6	Graded Total <sup>y</sup>
GB55	Pure Line	150	2-3	59	47.3	51.4	1.4	0.0	0.0	0.0	100.0	1.52	1.65	0.04	0.00	0.00	0.00	3.22
				61	36.0	58.0	6.0	0.0	0.0	0.0	100.0	1.57	2.52	0.26	0.00	0.00	0.00	4.35*
				63	27.9	63.6	8.5	0.0	0.0	0.0	100.0	1.57	3.57	0.48	0.00	0.00	0.00	5.61
Pierroton	Syngenta	150	2	60	58.2	41.8	0.0	0.0	0.0	0.0	100.0	3.70	2.65	0.00	0.00	0.00	0.00	6.35
				63	45.5	54.5	0.0	0.0	0.0	0.0	100.0	2.61	3.13	0.00	0.00	0.00	0.00	5.74*
				64	30.1	67.3	2.7	0.0	0.0	0.0	100.0	1.48	3.31	0.13	0.00	0.00	0.00	4.92
Poweron	Syngenta	134	2	60	36.5	56.3	7.3	0.0	0.0	0.0	100.0	1.52	2.35	0.30	0.00	0.00	0.00	4.18
				62	24.0	66.1	9.9	0.0	0.0	0.0	100.0	1.26	3.48	0.52	0.00	0.00	0.00	5.26*
				64	17.7	71.0	11.3	0.0	0.0	0.0	100.0	0.96	3.83	0.61	0.00	0.00	0.00	5.39
Verdigon	Syngenta	146	2	60	39.8	57.1	3.1	0.0	0.0	0.0	100.0	1.70	2.44	0.13	0.00	0.00	0.00	4.26
				62	30.7	62.0	7.3	0.0	0.0	0.0	100.0	1.83	3.70	0.44	0.00	0.00	0.00	5.96*
				64	23.3	67.8	8.9	0.0	0.0	0.0	100.0	1.48	4.31	0.57	0.00	0.00	0.00	6.35

<sup>z</sup>Percent calculated as % of total of 1-6 sieve beans.

<sup>y</sup>Total tons/acre of the graded beans, including sieve sizes 1-6. Values will be lower than those reported in Table 4 because some beans are lost in the grading process. Analysis of variance (Table 4) was calculated using the harvest marked with \*.

**Table 4. Statistical comparison of yields of commercial green bean lines, Corvallis, 2011<sup>z</sup>.**

Line	Intended Use	T/A Unadjusted		T/A Adjusted <sup>y</sup>	
		Mean	Mean Comparison <sup>x</sup>	Mean	Mean Comparison <sup>x</sup>
OR54 (ck)	full	9.9	ab	12.2	ab
6443	full	10.7	a	12.7	ab
91G (ck)	full	10.0	ab	10.6	bc
Huntington	full	9.6	abcd	10.4	bc
FIVC6-0999	5	6.4	ghij	8.0	efgh
FIVC6-1001	5	6.8	fghi	7.9	efghi
FORC6-0954	5	6.8	fghi	7.5	fghij
SB4481	5	7.6	defgh	8.0	efghi
Dynasty	4-5	7.0	efghi	7.0	ghij
Sahara (ck)	4-5	9.7	abcd	9.7	cde
F19	4-5	7.5	defghi	7.5	fghij
F41	4-5	8.8	abcde	8.8	cdefg
FIVC6-0998	4-5	9.0	abcd	9.0	cdefg
SB4515	4-5	6.9	fghi	9.4	cdef
SB4556	4-5	8.4	bcdef	8.4	defg
WAV606	4	8.0	cdefg	8.0	efghi
BSC854	3-4	7.8	cdefgh	7.8	efghi
HS646	3-4	7.5	defgh	7.5	fghij
BSC8609	3	7.1	defghi	7.1	ghij
GB11	2-3	7.6	defgh	7.6	fghi
GB55	2-3	4.6	j	4.6	k
Kendo	3	6.4	ghij	6.4	hijk
Pierroton	2	6.1	hij	6.1	ijk
Poweron	2	5.6	ij	5.6	jk
Verdigon	2	6.2	ghij	6.2	hijk
Furano	Romano	10.3	ab	10.3	bcd
Tapia (ck)	Romano	10.3	ab	10.3	bcd
LSD 0.05		1.9		2.0	

<sup>z</sup>Based on one selected harvest for each variety (marked with \* on Table 3), which was usually the harvest closest to optimal based on that variety's intended use (50% 1-4 sieve for full sieve varieties). Yields are field yields of 1-6 sieve beans.

<sup>y</sup>Full sieve beans were adjusted to 50% 1-4 sieve; all others were unadjusted.

<sup>x</sup>Means followed by the same letter are not significantly different.

**Table 5. Notes on June 24 commercial bean trial, Corvallis, Oregon, 2011.**

Line	Pod Length (cm)	Pod Straightness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smoothness <sup>x</sup>	Pod Color <sup>w</sup>	Sweetness	Flavor <sup>y</sup>			Notes <sup>u</sup>
							Astringency	Beani-ness	Perfumi-ness	
OR54 (ck)	16.0	5	round	5	5	7	7	8	1	Full sieve bean that may have a mix with a smaller sieve bean.
6443	17.0	5	round	5	5	5	7	9	1	
91G (ck)	16.0	5	round	5	5	6	7	7	1	
BSC854	15.0	5	heart-round	7	4	3	5	7	1	Segregating for heart and round cross-section.
BSC8609	11.0	7	heart	9	5	1	1	7	1	Bitter flavor. Constricted necks on a small percentage of pods in this variety.
Dynasty	14.5	7	round	7	5	8	5	7	1	
F19	12.0	7	oval	5	5	7	3	7	1	
F41	15.5	4	round	7	4	7	5	5	1	Slight pod curve in larger sieve sizes. Line seems more susceptible to white mold than most (on par with BBL).
FIVC6-0998	13.5	5	round	7	6	3	3	7	1	
FIVC6-0999	12.5	6	round-cb	7	6	7	3	7	5	
FIVC6-1001	15.5	7	round	7	5	3	3	7	1	
FORC6-0954	13.5	7	round	7	6	5	7	7	1	
GB11	11.0	5	round	7	4	7	7	5	1	
GB55	11.0	8	round	7	4	3	1	7	5	
HS646	14.0	7	round	7	6	7	1	7	1	PC type. Easy to pick.
Huntington	14.5	6	round	7	4	7	3	7	1	
Kendo	12.5	7	round	9	4	7	5	7	1	Tough skin.
Pierroton	12.0	6	round	7	5	5	7	9	1	
Poweron	11.0	7	round	7	5	5	5	5	9	
Sahara (ck)	13.5	8	round	7	7	3	3	7	1	
SB4481	15.0	8	round	7	3	7	3	5	7	Shiny pods.
SB4515	16.5	5	round	7	3	7	3	7	5	

**Table 5. Notes on June 24 commercial bean trial, Corvallis, Oregon, 2011 (cont).**

Line	Pod Length (cm)	Pod Straightness <sup>z</sup>	Pod Cross Section <sup>y</sup>	Pod Smoothness <sup>x</sup>	Pod Color <sup>w</sup>	Sweetness	Flavor <sup>v</sup>			Notes <sup>u</sup>
							Astringency	Beani-ness	Perfumi-ness	
SB4556	14.0	7	round-cb	7	4	7	7	5	1	
Verdigon	13.0	9	round	7	4	7	7	3	1	
WAV606	12.5	6	round	5	wax	3	3	3	1	
Furano	16.0	5	flat	5	4	5	5	7	1	Average seed length 9.5 mm
Tapia (ck)	15.5	5	flat	5	5	5	1	7	1	Average seed length 8.4 mm.

<sup>z</sup>Scores based on a 1-9 scale with 9 straightest

<sup>y</sup>Cross section: cb = crease-back

<sup>x</sup>Scores based on a 1-9 scale with 9 smoothest

<sup>w</sup>Scores based on a 1-9 scale with 9 darkest

<sup>v</sup>Scores based on a 1-9 scale with 9 strongest

<sup>u</sup>Notes taken on prime harvest date; BBL = bush blue lake; PC = persistent chlorophyll.



Table 6. 2011 white mold field trial results (ranked by geometric index).

Entry	Incidence (%)	Mean Comparison	Severity (%)	Mean Comparison	Geometric index
Cornell 501	4	p	3	u	3.06
L192	21	mnop	5	tu	10.31
6790	18	op	10	rstu	13.23
6743	29	ijklmnop	63	stu	13.40
6758	20	nop	10	rstu	14.14
6235	25	klmnop	10	rstu	15.81
NY6020-5	19	nop	14	opqrstu	16.06
6718	23	lmnop	13	pqrstu	16.77
6712	30	ijklmnop	10	rstu	17.32
6744	35	hijklmnop	13	pqrstu	20.92
6793	28	jklmnop	18	nopqrstu	21.94
6792	39	ghijklmnop	13	pqrstu	22.01
6771	44	efghijklmno	11	qrstu	22.19
6229	43	fghijklmnop	14	opqrstu	24.17
6765	46	defghijklmno	14	opqrstu	25.22
G122	44	efghijklmno	15	opqrstu	25.62
6711	40	ghijklmnop	20	mnopqrstu	28.28
6722	39	ghijklmnop	21	lmnopqrstu	28.70
6703	38	ghijklmnop	23	lmnopqrstu	29.05
6688	70	abcdefgh	13	pqrstu	29.58
6772	38	ghijklmnop	25	klmnopqrstu	30.62
6780	48	defghijklmno	20	mnopqrstu	30.82
6733	58	bcdefghijklmn	18	nopqrstu	31.72
6705	53	cdefghijklemo	20	mnopqrstu	32.40
6794	63	abcdefghijk	18	nopqrstu	33.07
6715	63	abcdefghijk	18	nopqrstu	33.07
6768	55	cdefghijklemo	20	mnopqrstu	33.17
6783	48	defghijklmno	25	klmnopqrstu	34.46
6766	63	abcdefghijk	20	mnopqrstu	35.36
6762	61	abcdefghijkl	21	lmnopqrstu	36.08
6706	53	cdefghijklemo	25	klmnopqrstu	36.23
WMG388	70	abcdefgh	20	mnopqrstu	37.42
6784	70	abcdefgh	20	mnopqrstu	37.42
6779	70	abcdefgh	20	mnopqrstu	37.42
6799	61	abcdefghijkl	24	klmnopqrstu	38.14
6778	50	defghijklmno	30	jklmnopqrs	38.73
6704	63	abcdefghijk	25	klmnopqrstu	39.53
Ex Rico	65	abcdefghij	25	klmnopqrstu	40.31
6759	60	bcdefghijklm	28	klmnopqrst	40.62
WMM631	75	abcdefg	23	lmnopqrstu	41.08
WMG308	63	abcdefghijk	29	jklmnopqrs	42.39
6721	60	bcdefghijklm	30	jklmnopqrs	42.43

Table 6. 2011 white mold field trial results (continued).

Entry	Incidence (%)	Mean Comparison	Severity (%)	Mean Comparison	Geometric index
6750	73	abcdefgh	25	klmnopqrstu	42.57
6769	70	abcdefgh	28	klmnopqrst	43.87
6796	54	cdefghijklmo	36	hijklmnop	44.14
WMG904	65	abcdefghij	30	jklmnopqrs	44.16
6763	61	abcdefghijkl	33	ijklmnopqr	44.62
6230	68	abcdefghi	30	jklmnopqrs	45.00
6782	63	abcdefghijk	33	ijklmnopqr	45.07
6436	55	cdefghijklmo	38	hijklmno	45.41
WMG36	70	abcdefgh	33	ijklmnopqr	47.70
M0162	70	abcdefgh	35	ijklmnopq	49.50
6748	80	abcdef	33	ijklmnopqr	50.99
6745	75	abcdefg	35	ijklmnopq	51.23
6707	70	abcdefgh	38	hijklmno	51.23
6795	61	abcdefghijkl	44	ghijklm	51.77
6686	63	abcdefghijk	44	ghijklm	52.29
6174	75	abcdefg	38	hijklmno	53.03
6789	90	abc	33	ijklmnopqr	54.08
6774	85	abcd	35	ijklmnopq	54.54
6791	75	abcdefg	40	hijklmn	54.77
6761	73	abcdefgh	43	ghijklm	55.51
6788	75	abcdefg	43	ghijklm	56.46
6693	75	abcdefg	43	ghijklm	56.46
6764	66	abcdefghij	53	efghij	58.98
6241	90	abc	40	hijklmn	60.00
6189	83	abcde	45	ghijkl	60.93
WMG903-7	100	a	40	hijklmn	63.25
WMG861	85	abc	48	fghijk	63.54
5630	75	abcdefg	60	defgh	67.08
6484	95	ab	48	fghijk	67.18
6682	90	abc	55	efghij	70.36
6767	95	ab	53	efghij	70.62
6494	80	abcdef	65	cdefg	72.11
6746	95	ab	55	efghij	72.28
6137	90	abc	60	defgh	73.48
5669	90	abc	65	cdefg	76.49
6342	90	abc	70	bcdef	79.37
6685	95	ab	70	bcdef	81.55
6477	95	ab	75	bcde	84.41
5402	95	ab	75	bcde	84.41
6284	90	abc	80	abcd	84.85
5613	100	a	75	bcde	86.60
6347	90	abc	85	abcd	87.46

Table 6. 2011 white mold field trial results (continued).

Entry	Incidence (%)	Mean Comparison	Severity (%)	Mean Comparison	Geometric index
91G	100	a	80	abcd	89.44
6338	100	a	80	abcd	89.44
6443	100	a	85	abcd	92.20
6502	100	a	90	abcd	94.87
6495	100	a	100	abcd	100.00

**Table 7. Yield, percent 1-4 sieve, days to maturity and white mold scores for select breeding lines and checks. Experimental lines that had high yields and low disease scores are highlighted.**

Entry	Pedigree	T/A	% 1-4	Days to Maturity	Incidence (%)	Severity (%)	Index	Stem dia.
Cornell 501		8.3	77.3	69	3.75	2.5	0.09	2.75
L192		-	-	-	21.25	5	1.06	2
6790	6230/6193	6.7	68.9	66	17.5	10	1.75	2.75
6743	6230/6137	11.2	44.2	69	28.75	6.25	1.80	2.25
6758	Q028-1 E52-3-6	7.2	50.0	67	20	10	2.00	2
6235	5402/NY 1-6020-5	7.2	74.4	70	25	10	2.50	2
NY6020-5		5.1	66.7	65	18.75	13.75	2.58	2.75
6718	6229/6137	6.8	73.0	66	22.5	12.5	2.81	3
6712	6229/6137	7.5	79.7	65	30	10	3.00	2.25
6744	Q006-1 A126-8-7	8.6	38.2	71	35	12.5	4.38	1.75
6793	6268/6193	8.3	69.3	66	27.5	17.5	4.81	3
6792	6268/6193	13.4	61.1	70	38.75	12.5	4.84	2.75
6771	6126/6230	9.1	56.3	69	43.75	11.25	4.92	2.5
6765	6230/6104	7.4	69.2	66	46.25	13.75	6.36	2
G122		-	-	-	43.75	15	6.56	2
6711	6229/6137	7.5	61.5	66	40	20	8.00	2.25
6703	6230/6189	6.2	70.1	65	37.5	22.5	8.44	2
6688	B8131/4-1-1-1/Cornell 501	9.5	48.5	66	70	12.5	8.75	1.75
6772	6230/6126	10.4	84.1	66	37.5	25	9.38	2.5
6780	6268/6137	-	-	-	47.5	20	9.50	2
6733	6230/6137	7.1	66.7	69	57.5	17.5	10.06	2.5
6705	6230/6189	5.5	63.8	66	52.5	20	10.50	2
6794	6229/6204	10.6	67.8	69	62.5	17.5	10.94	2.75
6715	6229/6137	8.7	68.4	66	62.5	17.5	10.94	2.25
6768	6126/6229	8.7	68.4	66	55	20	11.00	2.75
6783	6230/6189	9.6	64.8	69	47.5	25	11.88	3
6766	6230/6104	7.7	71.4	67	62.5	20	12.50	2
6762	6104/6230	8.8	37.1	65	61.25	21.25	13.02	2.75
6706	6230/6189	10.0	49.5	66	52.5	25	13.13	1.75
6784	6193/6229	7.1	58.1	64	70	20	14.00	2
6779	6230/6137	8.2	81.4	65	70	20	14.00	2.75
6799	6230/6212	7.3	87.7	69	61.25	23.75	14.55	2
6778	6229/6137	6.5	86.8	62	50	30	15.00	2.25
6704	6230/6189	8.5	64.3	66	62.5	25	15.63	1.75
Ex Rico		-	-	-	65	25	16.25	1
6721	6229/6137	6.5	83.5	64	60	30	18.00	2.75
6750	Q020-1 D70-2-4	5.4	96.3	66	72.5	25	18.13	2.25
6769	6126/6229	9.2	75.5	66	70	27.5	19.25	1.75
6796	6204/6230	9.6	69.2	64	53.75	36.25	19.48	2
6763	6230/6104	9.5	41.1	67	61.25	32.5	19.91	2
6782	6189/6229	8.3	91.1	65	62.5	32.5	20.31	2

**Table 7. Yield, percent 1-4 sieve, days to maturity and white mold scores for select breeding lines and checks (cont).**

Entry	Pedigree	T/A	% 1-4	Days to Maturity	Incidence (%)	Sever-ity (%)	Index	Stem dia.
MO162		-	-	-	70	35	24.50	2
6748	Q008-2 B78-5-3	8.2	62.6	66	80	32.5	26.00	1.25
6745	Q012-1 A182-2-6	9.3	36.4	64	75	35	26.25	1.75
6707	6230/6189	8.6	55.4	62	70	37.5	26.25	1.75
6795	6229/6204	10.8	58.8	67	61.25	43.75	26.80	2.25
6686	5669/B7709/6-1	9.2	84.2	66	62.5	43.75	27.34	1.5
6789	6230/6193	8.5	51.1	65	90	32.5	29.25	2
6774	6126/6230	11.6	53.1	69	85	35	29.75	2
6791	6268/6193	10.5	76.1	69	75	40	30.00	2.25
6761	6229/6104	8.2	65.3	62	72.5	42.5	30.81	2
6788	6193/6230	9.2	81.2	66	75	42.5	31.88	2
6693	Cornell 501/5651	10.0	74.5	65	75	42.5	31.88	2
6764	6230/6104	6.5	73.0	65	66.25	52.5	34.78	1.25
5630		11.3	73.4	66	75	60	45.00	1.25
6682	5669/B7709/6-1	7.1	87.3	64	90	55	49.50	1.5
6767	6126/6229	8.8	79.6	66	95	52.5	49.88	1.75
6746	Q012-1 A182-3-3	10.2	32.7	64	95	55	52.25	1.75
6685	5669/B7709/6-1	9.5	85.1	64	95	70	66.50	1.5
5402		12.3	52.3	69	95	75	71.25	1.5
91G		11.7	65.2	66	100	80	80.00	1
6443	B7354-6-2-2/5402	12.3	54.7	71	100	85	85.00	1.5

Figure 1. Commercial Bean Adjusted T/A 2011 - Full Sieve Varieties

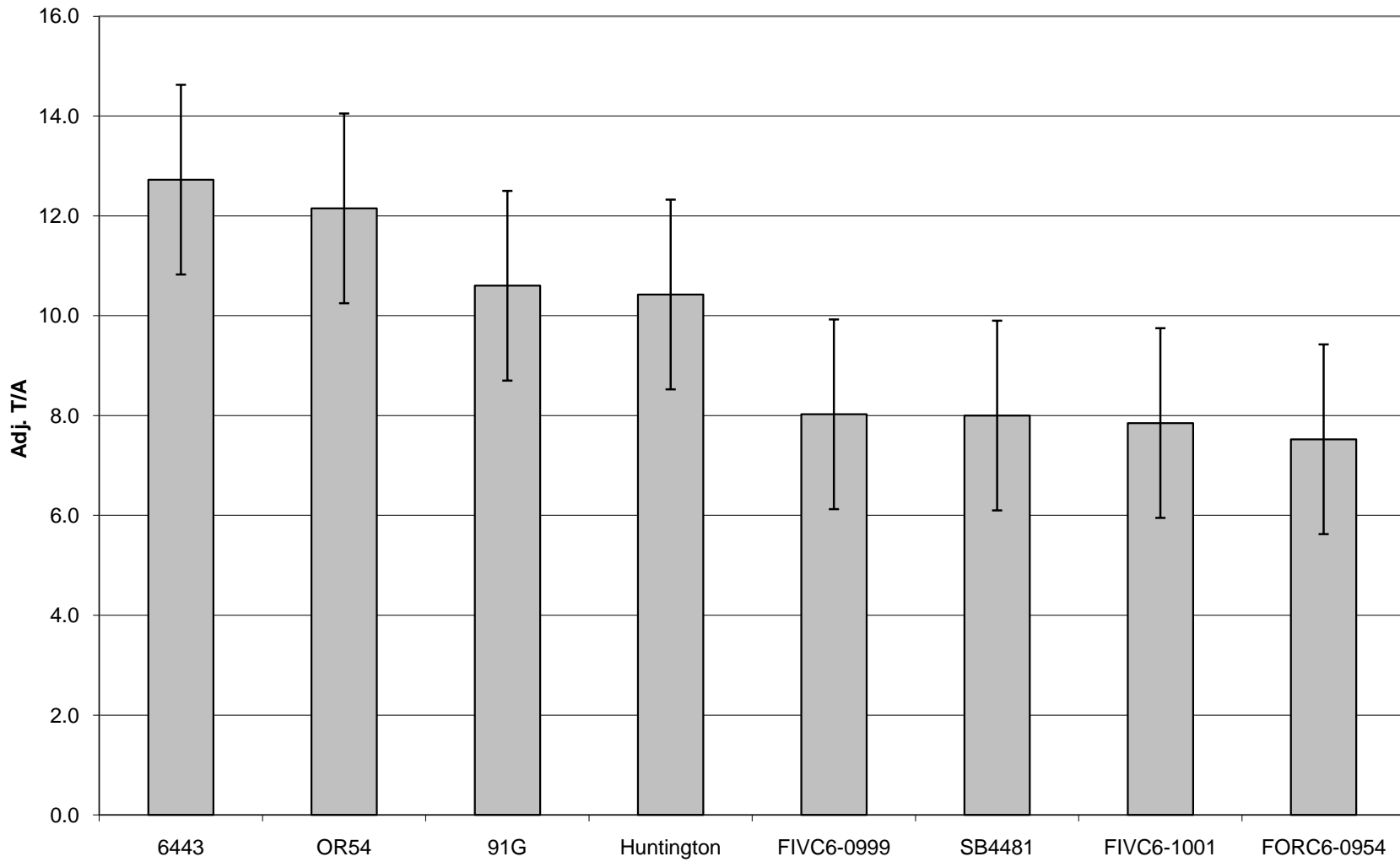


Figure 2. Commercial Bean T/A 2011 - Small Sieve Varieties

