

2003-04 Pennsylvania Small Grains Performance Report



In 2003 Penn State reinitiated variety performance trials with small grains. These tests will be conducted annually to provide interested persons with information regarding the performance of small grains grown in Pennsylvania. This report summarizes performance results for the 2003–2004 growing season.

Winter wheat varieties were tested at the Russell E. Larson Agricultural Research Center at Rock Springs in Centre County and at the Southeast Agricultural Research and Extension Center near Landisville in Lancaster County. Winter barley varieties (commercial and experimental) were tested at Southeast Agricultural Research and Extension Center near Landisville and on a grower field near Rheems, both in Lancaster County.

Procedures

Private seed companies and universities provided the entries for these trials. Contact information for each company/university is listed in Table 1. Seed treatments varied and were applied by the entrants. Most were Raxil/Thiram or Dividend. A total of 51 wheat, 8 barley, and 1 triticale varieties were entered. The triticale was tested with the wheat. In addition, several experimental hulled and hulless barley lines were included in the barley trials.

Winter wheat:

The plots in Lancaster County were planted on October 24, 2003. Each plot had seven, 12-foot-long rows spaced at 7.5 inches. The plots were trimmed to seven feet long and all rows were harvested. No preplant nitrogen was used, and all plots were topdressed with 60 lb N/a on March 31, 2004. The plots were harvested on July 2, 2004.

The plots in Centre County were set up similarly to those in Lancaster County, except rows were spaced at 7

inches. They were planted on October 2, 2003, fertilized with 60 lb N/acre on April 21, 2004, and harvested on July 21, 2004.

The following observations were made for the trials:

Yield was based on 60 lbs per bushel for wheat and 50 lbs per bushel for triticale. Moisture was adjusted to 12 percent.

Height is the average length of plants from the ground to the highest part of the head.

Lodging was rated as follows:

- 0 = no lodging
- 1 = a few (<10%) tillers leaning significantly
- 2 = several (25%) tillers leaning or broken, but would not hinder harvest
- 3 = many (>25%) tillers leaning or broken, and would probably cause harvest problems
- 4 = most tillers broken
- 5 = all tillers broken or flattened

Disease evaluation:

Powdery mildew was rated at Rock Springs on May 25, 2004. The crop has just finished flowering (Zadoks G.S. 69) at time of assessment. Rating scale is adapted from that published by P.E. Lipps, *Phytopathology* 79:462–470.

Powdery Mildew Rating Scale

Scale	Leaf Evaluated	% Leaf Area Affected
0	Any	0 to <1%
1	Fourth	1–50%
2	Third	1–5%
3	Third	6–15%
4	Third	>15%
5	Second	1–5%
6	Second	6–15%
7	Second	>15%
8	Flag	1–5%
9	Flag	5–15%
10	Flag	>15%

Winter barley:

The plots at Landisville and Rheems were planted on October 3 and October 9, 2003, respectively. Each plot had seven, 12-foot-long rows spaced at 7 inches. No preplant nitrogen was used. The plots at Landisville were topdressed with 40 lb N/a on March 31, 2004. No fertilizer was applied at Rheems. The plots at Landisville and Rheems were harvested on June 21 and 23, 2004, respectively.

The following observations were made for the trials:

Yield was based on 48 lbs per bushel (hulled) or 56 lbs per bushel (hulless). Moisture was adjusted to 12 percent.

Height is the average length of plants from the ground to the highest part of the head.

Lodging was rated as percent of plants leaning significantly or broken.

Foliar disease was evaluated at Landisville on May 26, 2004. The percentage of damaged tissue was rated on the flag leaves on three tillers in each plot at the mid-dough stage. Both scald and net blotch were severe throughout the trial. The most prevalent disease on each variety was assigned based on disease symptoms.

Interpretation of results

Variety performance differences are caused partially by genetic differences and partially by soil variation and other environmental variations which cannot be adequately controlled. Thus, small differences in performance may have no significance. Multiple-year and site averages are a more valid indication of the performance of a specific variety than are data for a single year or site. Multi-year comparisons for these varieties are not yet available, but will be tracked over the next several years and reported in future reports. Statistical procedures

have been used for the most important characteristics to allow meaningful comparisons of variety averages at a particular location. A standard least significant difference (LSD) value is provided for comparing varieties. Any difference between two variety averages that exceeds the LSD value is considered significant and not simply a result of uncontrolled environmental variation.

Traditionally, LSD values have been calculated at the 0.05 level, which means that when differences between varieties exceed the LSD, we can be 95 percent confident that the differences are not due to chance. The downside of this approach is that it leads to the conclusion that many varieties in the test have similar yield performance when there really may be differences in the yield potential. Many universities have switched to a less conservative 0.25 level for the LSD, thus reducing the chance of concluding that varieties are not different when a true difference exists among the lines. In this report, we present the LSD values at both the 0.05 level and the 0.25 level for your consideration.

The value of coefficient of variation (CV) is a measure of relative variation useful in evaluating the precision achieved in an experiment. In grain and forage trials, for example, the CV value for yield is often between 5 and 15 percent. Confidence in the reliability of the experimental results declines as the CV value increases. Uncontrollable or unmeasurable variations in soil fertility, soil drainage, and other environmental factors contribute to increased CV values.

Table 1. Source of entries for the wheat and barley variety trials.

Contact information	Entries
AgriCulver Seeds 2059 Rte. 96 Trumansburg, NY 14886	Wheat: Genesis 9953 Triticale: TriCal 336 Barley: McGregor
AgriPro Wheat Box 411 Brookston, IN 47923 765-563-3111	Wheat: Benton, Cooper, Douglas
Featherstone Seed, Inc. 13941 Genito Rd. Amelia, VA 23002 804-561-3754	Wheat: Featherstone 520
Growmark FS, Inc. 5901 Vera Cruz Rd. Emmaus, PA 18059	Wheat: FS Seeds 652, 621
Ohio Seed Improvement Association 6150 Avery Rd. Box 477 Dublin, OH 43017	Wheat: Daisy, Bravo, Hopewell
Ohio State University 1680 Madison Ave. Wooster, OH 44691 330-263-3944	Wheat: OH 669, OH 708, OH 645
Penn State University 116 ASI Bldg. University Park, PA 16802 814-865-2025	Wheat: Pennmore, PA 158, Redcoat
Pioneer Hi-Bred P.O. Box 280 Mount Joy, PA 17552 717-653-5605	Wheat: Pioneer 25R37, 25R78, 25R23, 25R54

(continued)

Table 1. Source of entries for the wheat and barley variety trials, cont'd.

Contact information	Entries
Royster-Clark, Inc. 717 Robinson Rd. SE Washington Court House, OH 43160 740-869-2181	Wheat: Vigoro Tribute
Seedway, Inc. 5901 Vera Cruz Rd. Emmaus, PA 18059	Wheat: SW 8302, 8309, 27, 43
Steyer Seeds, Inc. 6154 N. County Rd. 33 Tiffin, OH 44883 419-992-4570	Wheat: Wiley, Bascom, Bernard
Syngenta Seeds, Inc. P.O. Box 1240 Winterville, NC 28590 252-746-3004	Wheat: NK Brand Coker 9663, 9184, 9295, 9375, 9312, B970051
University of Maryland 27664 Nanticoke Rd. Salisbury, MD 21801 410-742-1178	Wheat: MD 11-52, MD 71-5, MV 5-46, MV 6-82, MV 8-29 Barley: Catchpenny
VPI and SU 2229 Menokin Rd. Warsaw, VA 22573 804-333-3485	Wheat: McCormick, Sisson, Roane, VA97W- 024, VA98W-342, VA98W-335 Barley: Doyce, Thoroughbred, Price, Callao, Nomini
Wilken Seed Grains, Inc. 14087 N. 1800 E. Rd., P.O. Box 770 Pontiac, IL 61764 815-844-3458	Wheat: Wilken 102, 121, 124, 154, 204, 106

Table 2. Winter wheat variety performance at Landisville, Lancaster County, Pa., 2003–2004.

Source	Entry	Yield ¹ (bu/a)	Test wt (lb/bu)	Height (in)	Lodging score (0-5)	Awns
AgriPro	Cooper	105.0	58.1	35.4	0.8	None
Syngenta	NK Coker 9312	97.7	58.8	33.0	1.3	Short
Wilken	Wilken 102	95.4	58.3	40.7	1.5	Short
Vigoro (Royster-Clark)	Tribute	95.3	60.7	34.3	0.8	None
Univ of Maryland	MV 8-29	94.7	59.4	34.7	0.8	Short
Pioneer	Pioneer 25R54	93.7	56.6	35.1	0.3	Long
Univ of Maryland	MV 5-46	93.5	59.6	34.7	0.5	Short
Pioneer	Pioneer 25R78	93.4	58.4	33.9	0.3	Long
Wilken	Wilken 106	92.8	58.0	40.0	1.0	Short
AgriCulver	Genesis 9953	92.5	56.1	37.6	1.5	Short
Steyer	Bernard	91.4	57.7	39.9	1.5	Short
AgriCulver	TriCal 336 ²	91.4	50.0	44.3	0.8	Long
Seedway	SW27	91.0	56.8	35.1	1.0	Short
Wilken	Wilken 124	90.8	59.2	40.6	0.8	Long
Seedway	SW8302	90.8	58.4	35.5	0.3	Long
Ohio State	OH 708	90.8	55.2	40.3	1.0	Short
VA Tech	Sisson	90.3	58.7	32.9	1.3	Short
Steyer	Wiley	90.3	59.4	38.2	1.3	Short
Ohio Seed Improv Assoc	Bravo	88.7	57.4	39.9	0.3	None
Wilken	Wilken 204	88.4	57.4	41.5	1.8	Short
Wilken	Wilken 154	87.6	57.6	38.9	0.3	None
VA Tech	McCormick	87.6	59.8	32.6	0.8	None
Steyer	Bascom	87.4	57.5	37.9	0.8	None
Syngenta	NK Coker 9184	87.3	60.0	34.4	0.3	Short
Ohio Seed Improv Assoc	Daisy	86.8	58.2	35.4	0.8	Short
Ohio Seed Improv Assoc	Hopewell	86.7	56.8	35.2	1.0	Short
Syngenta	NK Coker 9375	86.6	56.0	39.0	1.0	None
FS Seeds	FS621	85.4	56.6	34.8	1.0	Short
Ohio State	OH 669	84.9	56.0	36.5	1.8	None
Penn State	Pennmore	84.8	58.7	41.0	1.0	None
VA Tech	VA98W-335	84.5	58.0	29.8	0.8	Short
VA Tech	VA97W-024	84.4	56.6	37.6	1.5	Short
Pioneer	Pioneer 25R23	84.1	58.4	35.3	0.0	Long
AgriPro	Benton	83.9	56.2	35.0	0.8	None
Seedway	SW43	83.8	55.9	33.7	1.3	None
Wilken	Wilken 121	83.5	57.5	37.4	1.5	None
VA Tech	VA98W-342	83.4	57.8	30.2	0.0	Long
Univ of Maryland	MD 71-5	82.8	57.4	29.7	0.0	Long
Seedway	SW8309	81.6	57.6	36.2	0.5	None
Pioneer	Pioneer 25R37	81.4	58.0	34.1	0.0	Short
Featherstone	Featherstone 520	81.0	58.8	35.9	1.8	Short
AgriPro	Douglas	79.0	56.0	35.4	0.5	Long
Syngenta	B970051	78.7	56.8	32.1	0.3	Short
Penn State	PA158	78.7	57.8	40.3	1.8	None
Univ of Maryland	MV 6-82	78.1	59.3	33.7	0.0	Short
FS Seeds	FS652	78.0	55.9	33.4	1.0	Long
Syngenta	NK Coker 9295	77.6	56.5	35.3	1.3	Short
VA Tech	Roane	75.8	58.8	32.7	0.5	Short
Univ of Maryland	MD 11-52	75.5	58.7	30.3	0.5	Short
Syngenta	NK Coker 9663	75.5	57.9	42.8	2.3	None
Penn State	Redcoat	70.9	57.6	49.1	2.0	Short
Ohio State	OH 645	68.0	55.9	36.4	0.5	Long
	Overall mean	86.0	57.6	36.3	0.9	
	LSD (0.05)	9.8	1.2	1.5	0.8	
	LSD (0.25)	5.7	0.7	0.9	0.4	
	CV (%)	11	3.1	10.9	86.6	

¹Wheat yields were based on a test weight of 60 lb/bu. Yield of the triticale variety was based on a test weight of 50 lb/bu.²Triticale variety

Table 3. Winter wheat variety performance at Rock Springs, Centre County, Pa., 2003–2004.

Source	Entry	Yield ¹ (bu/a)	Test wt (lb/bu)	Height (in)	Lodging score (0-5)	Powdery mildew score
AgriPro	Cooper	78.1	54.3	29.2	1.9	5.5
Pioneer	Pioneer 25R54	77.4	53.8	30.5	1.0	1.0
Ohio State	OH 708	76.1	54.0	35.0	2.1	1.0
VA Tech	VA97W-024	74.6	52.8	31.0	1.2	0.5
AgriPro	Benton	74.0	53.1	31.5	1.4	1.2
Steyer	Wiley	73.4	55.2	33.0	2.0	0.0
Seedway	SW8302	73.1	53.4	30.9	1.2	5.3
Pioneer	Pioneer 25R37	72.8	54.0	30.5	1.2	2.0
Seedway	SW8309	72.0	53.9	30.8	1.9	2.5
Pioneer	Pioneer 25R78	71.7	54.1	28.8	1.4	5.2
AgriPro	Douglas	71.4	51.6	31.5	1.2	3.5
VA Tech	VA98W-335	71.0	54.0	25.2	1.8	0.0
Univ of Maryland	MV 8-29	70.8	54.4	28.5	1.6	0.8
Vigoro (Royster-Clark)	Tribute	70.8	56.7	29.8	2.2	0.2
Syngenta	NK Coker 9375	69.3	52.1	34.5	1.8	1.5
VA Tech	Sisson	69.2	53.2	27.2	2.4	0.2
Wilken	Wilken 124	68.8	54.5	35.2	1.4	4.8
Syngenta	NK Coker 9184	68.5	55.2	27.5	1.2	0.0
Ohio Seed Improv Assoc	Bravo	68.2	55.8	33.8	1.1	3.8
Ohio Seed Improv Assoc	Hopewell	67.4	51.6	31.8	1.1	0.8
Syngenta	NK Coker 9663	67.2	54.0	37.2	2.1	2.2
Steyer	Bascom	67.2	54.2	33.0	1.9	5.0
VA Tech	McCormick	67.0	55.8	29.2	1.4	0.5
Syngenta	NK Coker 9312	66.3	55.2	27.2	1.8	0.2
Wilken	Wilken 204	66.0	53.8	36.8	2.1	5.5
VA Tech	VA98W-342	65.4	52.5	26.0	1.5	0.0
Syngenta	NK Coker 9295	65.1	52.8	31.8	1.6	0.0
AgriCulver	Genesis 9953	64.8	52.2	33.2	2.2	1.0
Ohio State	OH 669	64.8	52.4	32.2	2.5	2.0
Univ of Maryland	MV 5-46	64.4	53.6	29.0	1.6	0.2
Wilken	Wilken 121	64.3	54.2	32.2	1.8	3.5
Seedway	SW43	64.1	53.6	29.0	1.9	0.0
Wilken	Wilken 106	64.0	54.2	35.5	2.2	7.2
Univ of Maryland	MD 11-52	63.2	53.3	23.2	2.0	0.2
Ohio Seed Improv Assoc	Daisy	63.1	52.6	30.0	2.0	3.2
Seedway	SW27	63.0	52.4	31.2	1.9	0.0
Wilken	Wilken 154	62.7	54.2	34.2	1.6	3.2
Wilken	Wilken 102	62.0	53.7	36.0	2.1	7.8
AgriCulver	TriCal 336 ²	62.0	48.0	38.8	1.5	0.2
Syngenta	B970051	61.8	51.0	27.5	2.0	2.0
Steyer	Bernard	60.0	54.3	33.0	2.1	4.2
Pioneer	Pioneer 25R23	60.0	51.8	29.8	1.6	3.5
Univ of Maryland	MD 71-5	59.9	52.8	25.2	1.8	0.0
FS Seeds	FS652	59.6	52.5	28.8	1.9	0.5
Penn State	PA158	58.8	55.6	35.0	2.8	6.0
Penn State	Pennmore	58.2	54.8	34.5	2.5	5.0
FS Seeds	FS621	58.2	52.4	31.5	2.1	1.2
Featherstone	Featherstone 520	55.0	51.0	29.5	2.4	0.0
Univ of Maryland	MV 6-82	55.0	54.4	27.8	1.8	2.5
Ohio State	OH 645	53.0	52.1	30.5	1.8	2.2
VA Tech	Roane	50.4	54.8	27.8	1.2	4.2
Penn State	Redcoat	44.8	53.4	40.2	2.0	3.6
	Overall mean	65.4	53.5	31.2	1.8	2.2
	LSD (0.05)	8.8	1.2	2.1	0.4	1.6
	LSD (0.25)	5.2	0.7	1.2	0.3	0.9
	CV (%)	13.3	3.1	11.9	28.0	106.0

¹Wheat yields were based on a test weight of 60 lb/bu. Yield of the triticale variety was based on a test weight of 50 lb/bu.²Triticale variety

Table 4. Winter wheat variety performance combined over locations in Lancaster and Centre Counties, Pa., 2003–2004.

Source	Entry	Yield ¹ (bu/a)	Test wt (lb/bu)	Height (in)	Lodging score (0-5)
AgriPro	Cooper	91.6	56.2	32.3	1.3
Pioneer	Pioneer 25R54	85.6	55.2	32.8	0.6
Ohio State	OH 708	83.5	54.6	37.7	1.6
Vigoro (Royster-Clark)	Tribute	83.1	58.7	32.1	1.5
Univ of Maryland	MV 8-29	82.8	56.9	31.6	1.2
Pioneer	Pioneer 25R78	82.6	56.3	31.4	0.8
Syngenta	NK Coker 9312	82.0	57.0	30.1	1.5
Seedway	SW8302	82.0	55.9	33.2	0.7
Steyer	Wiley	81.9	57.3	35.6	1.6
Wilken	Wilken 124	79.8	56.9	37.9	1.1
VA Tech	Sisson	79.8	56.0	30.1	1.8
VA Tech	VA97W-024	79.5	54.7	34.3	1.4
AgriPro	Benton	79.0	54.7	33.3	1.1
Univ of Maryland	MV 5-46	79.0	56.6	31.9	1.1
Wilken	Wilken 102	78.7	56.0	38.4	1.8
AgriCulver	Genesis 9953	78.7	54.2	35.4	1.9
Ohio Seed Improv Assoc	Bravo	78.5	56.6	36.9	0.7
Wilken	Wilken 106	78.4	56.1	37.8	1.6
Syngenta	NK Coker 9375	78.0	54.1	36.8	1.4
Syngenta	NK Coker 9184	77.9	57.6	31.0	0.7
VA Tech	VA98W-335	77.8	56.0	27.5	1.3
Steyer	Bascom	77.3	55.9	35.5	1.3
VA Tech	McCormick	77.3	57.8	30.9	1.1
Wilken	Wilken 204	77.2	55.6	39.2	1.9
Pioneer	Pioneer 25R37	77.1	56.0	32.3	0.6
Ohio Seed Improv Assoc	Hopewell	77.1	54.2	33.5	1.1
Seedway	SW27	77.0	54.6	33.2	1.5
Seedway	SW8309	76.8	55.8	33.5	1.2
AgriCulver	TriCal 336 (b)	76.7	49.0	41.6	1.1
Steyer	Bernard	75.7	56.0	36.5	1.8
AgriPro	Douglas	75.2	53.8	33.5	0.9
Wilken	Wilken 154	75.2	55.9	36.6	0.9
Ohio Seed Improv Assoc	Daisy	75.0	55.4	32.7	1.4
Ohio State	OH 669	74.9	54.2	34.4	2.1
VA Tech	VA98W-342	74.4	55.2	28.1	0.8
Seedway	SW43	74.0	54.8	31.4	1.6
Wilken	Wilken 121	73.9	55.9	34.8	1.7
Pioneer	Pioneer 25R23	72.1	55.1	32.6	0.8
FS/Seedway	FS621	71.8	54.5	33.2	1.6
Penn State	Pennmore	71.5	56.8	37.8	1.8
Syngenta	NK Coker 9295	71.4	54.7	33.6	1.4
Syngenta	NK Coker 9663	71.4	56.0	40.0	2.2
Univ of Maryland	MD 71-5	71.4	55.1	27.5	0.9
Syngenta	B970051	70.3	53.9	29.8	1.1
Univ of Maryland	MD 11-52	69.4	56.0	26.8	1.3
FS/Seedway	FS652	68.8	54.2	31.1	1.5
Penn State	PA158	68.8	56.7	37.7	2.3
Featherstone	Featherstone 520	68.0	54.9	32.7	2.1
Univ of Maryland	MV 6-82	66.6	56.9	30.8	0.9
VA Tech	Roane	63.1	56.8	30.3	0.9
Ohio State	OH 645	60.5	54.0	33.5	1.2
Penn State	Redcoat	57.9	55.5	44.7	2.0
	Overall mean	75.7	55.5	38.8	1.3

¹Wheat yields were based on a test weight of 60 lb/bu. Yield of the triticale variety was based on a test weight of 50 lb/bu.

²Triticale variety

Table 5. Winter barley variety performance at Landisville, Lancaster County, Pa., 2003–2004.

Selection ¹	Hulled Line (H)	Yield ² (bu/A)	Test Wt (lbs/bu)	Height (in)	Moisture (%)	Lodging (%)	Leaf Disease (% of flag)	Net Blotch ³	Scald ³
McGregor	H	105.2	42.5	37.3	11.1	80.0	1.8		x
Thoroughbred	H	98.1	45.4	38.3	11.4	45.0	4.3		x
Nomini *	H	87.8	41.2	40.3	11.4	74.3	8.8		x
VA98B-213	H	87.1	44.5	35.0	11.5	35.0	6.2	x	
Price	H	80.8	43.9	35.3	11.2	55.0	28.3	x	
Callao	H	80.6	44.1	31.8	11.5	80.0	7.1		x
Barsoy	H	75.5	44.3	39.3	11.3	55.0	55.0		x
Catchpenny *	H	74.4	39.8	36.5	11.5	57.5	50.9		x
VA01H-132		71.3	49.6	38.8	11.0	36.3	25.8		x
VA01H-68		70.5	56.3	39.0	11.6	55.3	7.6	x	
VA01H-1		64.9	55.2	35.3	11.8	45.0	18.8		x
VA00H-65		64.9	54.0	37.3	11.5	86.3	53.6	x	
VA00H-228		63.0	53.9	38.3	11.5	28.5	30.3	x	
VA01H-97		62.2	51.8	35.0	11.4	75.0	9.8		x
TX00D665		62.2	54.3	37.0	11.6	85.0	73.1		x
VA00H-10		61.7	53.4	37.0	11.5	23.8	6.7		x
VA01H-124		61.3	52.7	31.3	11.4	88.0	35.8		x
VA00H-95		60.2	52.0	34.5	11.6	92.5	68.7		x
VA01H-37		59.9	52.5	35.8	11.8	63.8	10.9		x
VA00H-89		59.6	52.9	36.8	11.6	90.0	52.9		x
VA01H-26		59.1	52.9	34.5	11.6	53.8	20.3		x
VA01H-3		59.0	52.5	37.0	11.5	88.5	59.8		x
VA01H-125		58.6	51.8	29.8	11.4	90.0	47.3	x	
VA01H-129		58.5	52.8	37.3	11.7	77.5	50.9		x
SC880248		57.3	51.8	37.5	11.3	80.5	42.5		x
H-585		57.2	52.5	38.3	11.3	88.8	71.5	x	
VA00H-99		55.8	51.7	35.5	11.6	91.3	66.6	x	
VA01H-31		55.3	51.7	35.5	11.7	63.8	36.4		x
Doyce		54.5	49.7	37.3	11.5	73.8	34.9		x
VA00H-97		54.4	51.4	35.8	11.4	79.8	60.4		x
VA00H-74		54.3	51.2	35.8	11.4	89.8	82.4		x
VA00H-72		53.5	49.8	35.0	11.5	92.5	73.6		x
VA00H-88		52.6	50.4	34.0	11.7	92.5	73.7		x
VA01H-113		51.9	53.7	41.3	11.7	56.8	25.7		x
VA01H-44		51.6	51.0	33.5	11.6	83.8	18.6		x
VA00H-70		51.0	51.6	34.3	11.4	87.3	67.3		x
VA01H-130		50.8	50.6	33.5	11.3	93.8	83.1		x
VA00B-91	H	50.7	40.9	31.8	11.7	50.0	18.5		x
VA01H-90		47.7	52.6	40.5	11.4	77.5	65.6		x
VA01H-43		47.5	52.9	33.5	11.9	38.5	26.1		x
VA01H-13		45.0	52.4	36.5	11.7	72.5	32.0		x
VA01H-122		39.9	55.7	36.8	11.7	65.0	78.8		x
Mean		62.3	50.4	36.0	11.5	70.0	40.3		
LSD (0.05)		12.5	2.2	2.2	0.4	27.7	35.2		
LSD (0.25)		7.3	1.3	1.3	0.2	16.2	20.6		
CV (%)		14.3	3.1	4.4	2.3	28.3	62.4		

¹Awnless selections indicated by *.²Yield based on 48 lb/bu for hulled lines and 56 lb/bu for hulless lines.³"x" indicates most prominent disease on flag leaf.

Table 6. Winter barley variety performance at Rheems, Lancaster County, Pa., 2003–2004.

Selection ¹	Hulled (H)	Yield ² (bu/A)	Test Wt (lbs/bu)	Height (in)	Moisture (%)	Lodging (%)	Spring Vigor (0-5)	Winter Kill (%)
Price	H	103.9	42.7	35.0	12.8	88.8	4.0	2.5
VA98B-213	H	102.3	43.8	32.3	12.6	70.0	4.3	8.8
Callao	H	102.1	42.8	30.3	12.9	85.0	4.3	0.0
Thoroughbred	H	99.8	40.9	36.5	12.9	82.5	5.0	1.3
McGregor	H	99.0	45.7	36.5	13.3	63.8	4.8	1.3
VA00B-91	H	97.9	43.9	35.3	12.7	70.0	2.0	28.8
Catchpenny *	H	97.4	41.9	38.8	12.6	50.0	2.8	22.5
Nomini *	H	86.3	42.7	40.5	12.5	72.5	4.0	8.8
VA01H-129		80.8	50.5	36.3	12.5	55.0	2.6	18.8
VA00H-89		80.4	53.5	38.0	12.7	63.8	2.4	31.3
VA01H-132		79.9	48.8	39.3	11.7	41.3	3.1	12.5
VA00H-70		79.0	53.0	36.3	12.8	53.8	2.1	23.8
Barsoy	H	76.8	44.6	39.8	12.5	76.3	2.9	18.8
VA00H-65		75.9	50.9	37.8	12.4	57.5	2.4	22.5
VA00H-95		75.7	51.6	38.0	12.6	66.3	2.1	26.3
VA00H-88		74.6	52.3	37.3	12.5	45.0	2.0	33.8
VA01H-97		73.8	50.5	34.3	12.3	60.0	1.9	40.0
VA00H-74		73.8	52.0	36.5	12.4	46.3	2.1	22.5
VA01H-68		72.4	55.3	37.0	12.6	51.3	1.0	57.5
VA01H-130		71.9	49.8	35.8	12.5	87.5	2.6	17.5
VA01H-90		70.1	54.1	39.3	12.6	62.5	1.9	37.5
SC880248		69.4	49.6	38.0	12.1	52.5	2.3	23.8
VA01H-3		69.3	52.8	36.3	12.4	50.0	2.1	36.3
Doyce		69.2	51.1	35.0	12.5	48.8	1.1	63.8
VA00H-72		69.0	53.0	35.5	12.5	63.8	2.8	20.0
VA00H-97		68.8	51.2	35.5	12.4	52.5	2.5	20.0
VA00H-99		67.5	51.2	37.0	12.5	55.0	2.4	21.3
VA01H-124		67.3	53.1	32.0	12.5	62.5	2.0	37.5
H-585		66.2	52.6	37.3	12.3	46.3	2.6	13.8
VA00H-228		65.0	50.4	36.8	12.2	46.3	1.4	40.0
VA01H-1		63.8	52.8	36.0	12.6	38.8	2.9	17.5
VA01H-113		63.7	52.1	39.3	12.2	62.5	1.8	46.3
VA00H-10		62.9	50.3	36.5	12.3	35.5	1.9	40.0
VA01H-125		62.2	52.6	30.0	12.5	68.8	1.8	40.0
VA01H-122		60.4	55.3	41.0	12.1	45.0	1.6	38.8
TX00D665		60.2	52.9	37.0	12.3	51.3	2.1	27.5
VA01H-44		57.9	52.6	33.0	13.3	42.5	0.3	82.5
VA01H-26		54.9	51.2	29.5	13.1	30.5	0.3	88.8
VA01H-31		54.1	53.0	33.0	12.6	43.8	0.5	82.5
VA01H-13		49.4	49.9	34.3	12.7	53.8	0.5	86.3
VA01H-37		48.9	52.2	31.0	12.7	26.3	0.3	80.0
VA01H-43		46.7	51.6	29.8	12.3	27.5	0.0	90.0
Mean		73.1	50.1	35.8	12.5	56.0	2.2	34.1
LSD (.05)		15.2	3.1	3.1	0.5	27.8	0.8	18.3
LSD (.25)		8.9	1.8	1.8	0.3	16.3	0.5	10.7
CV (%)		14.9	4.5	6.2	3.1	35.5	24.9	38.2

¹Awnless selections indicated by *.²Yield based on 48 lb/bu for hulled lines and 56 lb/bu for hullless lines.

Table 7. Winter barley variety performance combined over locations at Landisville and Rheems, Lancaster County, Pa., 2003–2004.

Selection ¹	Hulled (H)	Yield ² (bu/A)	Test Wt (lbs/bu)	Height (in)	Moisture (%)	Lodging (%)
McGregor	H	102.1	44.1	36.9	12.2	71.9
Thoroughbred	H	99.0	43.1	37.4	12.1	63.8
VA98B-213	H	94.7	44.1	33.6	12.1	52.5
Price	H	92.4	43.3	35.1	12.0	71.9
Callao	H	91.4	43.5	31.0	12.2	82.5
Nomini *	H	87.1	41.9	40.4	12.0	73.4
Catchpenny *	H	85.9	40.8	37.6	12.0	53.8
Barsoy	H	76.1	44.4	39.5	11.9	65.6
VA01H-132		75.6	49.2	39.0	11.3	38.8
VA00B-91	H	74.3	42.4	33.5	12.2	60.0
VA01H-68		71.5	55.8	38.0	12.1	53.3
VA00H-65		70.4	52.4	37.5	12.0	71.9
VA00H-89		70.0	53.2	37.4	12.1	76.9
VA01H-129		69.6	51.6	36.8	12.1	66.3
VA01H-97		68.0	51.1	34.6	11.8	67.5
VA00H-95		68.0	51.8	36.3	12.1	79.4
VA00H-70		65.0	52.3	35.3	12.1	70.5
VA01H-1		64.3	54.0	35.6	12.2	41.9
VA01H-124		64.3	52.9	31.6	11.9	75.3
VA01H-3		64.2	52.7	36.6	12.0	69.3
VA00H-74		64.0	51.6	36.1	11.9	68.0
VA00H-228		64.0	52.1	37.5	11.9	37.4
VA00H-88		63.6	51.3	35.6	12.1	68.8
SC880248		63.3	50.7	37.8	11.7	66.5
VA00H-10		62.3	51.8	36.8	11.9	29.6
Doyce		61.9	50.4	36.1	12.0	61.3
H-585		61.7	52.5	37.8	11.8	67.5
VA00H-99		61.6	51.5	36.3	12.0	73.1
VA00H-97		61.6	51.3	35.6	11.9	66.1
VA01H-130		61.3	50.2	34.6	11.9	90.6
VA00H-72		61.3	51.4	35.3	12.0	78.1
TX00D665		61.2	53.6	37.0	12.0	68.1
VA01H-125		60.4	52.2	29.9	11.9	79.4
VA01H-90		58.9	53.4	39.9	12.0	70.0
VA01H-113		57.8	52.9	40.3	12.0	59.6
VA01H-26		57.0	52.1	32.0	12.3	42.1
VA01H-44		54.7	51.8	33.3	12.4	63.1
VA01H-31		54.7	52.4	34.3	12.1	53.8
VA01H-37		54.4	52.3	33.4	12.2	45.0
VA01H-122		50.1	55.5	38.9	11.9	55.0
VA01H-13		47.2	51.1	35.4	12.2	63.1
VA01H-43		47.1	52.2	31.6	12.1	33.0
Mean		67.7	50.2	35.9	12.0	63.0

¹Awnless selections indicated by *.

²Yield based on 48 lb/bu for hulled lines and 56 lb/bu for hullless lines.

Prepared by: Dave Johnson, associate professor and senior research associate; Mark Antle, research support technologist; Shaun Heinbaugh, graduate assistant; Erick DeWolf, assistant professor of plant pathology; and Greg Roth, professor of agronomy. Thanks to John Stepanchak and Josh Yunginger for their help with the 2003–2004 Pennsylvania Small Grain Variety Trials.

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