

## **2002 PENNSYLVANIA WINTER WHEAT AND BARLEY PERFORMANCE TESTS**

The purpose of this report is to summarize the 2002 performance data of winter wheat and winter barley varieties in field tests in Centre and Lancaster counties, Pennsylvania. The tests were designed to evaluate grain production and other characteristics of both named and experimental varieties under the climatic and disease conditions that prevailed in the state. Two-year and three-year averages are provided for varieties that have been tested in more than one year at a location.

### **Experimental procedures.**

Each variety plot consisted of five rows, 12-feet long, with a 7-inch spacing between rows. Randomized block and lattice designs were used. Wheat experimental designs involved six replications and those for barley involved four replications. The planting rate was 2 bushels per acre for winter wheat and winter barley. The plots were trimmed to 8 feet prior to harvest and all five rows were combined for grain yield determination. All yields were determined with clean grain at about 12 percent moisture, and yields were adjusted to 48 and 60 pounds per bushel for barley and wheat, respectively. This year, grain yields were calculated using a new factor with the intent to more accurately reflect yields that a grower may expect.

### **Winter wheat variety evaluation 2002 disease ratings.**

Powdery mildew was rated at the Centre County location during the heading, flowering and early milk stages of the growth. The three ratings were combined to produce the disease reaction type shown in the PM Rating column. Stagonospora leaf blotch was rated at the early milk stage of growth. Ratings for Stagonospora are presented in the SN column of the report.

### **Interpretation of results.**

Variety performance differences are caused partially by genetic differences and partially by soil variation and other environmental variations that cannot be adequately controlled. Thus, small differences in performance may have no significance. Multiple-year averages are a more valid indication of the performance of a specific variety than data for a single year. 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.

The value for the 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.

### **Environmental conditions.**

Fall soil conditions were dry. Winter weather was relatively mild with limited snow cover. In Centre County, rainfall was 1 inch above average in March, 2.8 inches below average in April, 2.8 inches above average in May, and 1.4 inches above average in June. Several severe frosts during barley flowering in Centre County caused sterility throughout the trial. As a result, we have no winter barley data from our Centre County location. Some winter wheat yields in Centre County may have also been reduced due to frost damage.

Rainfall in Lancaster County was 1.2 inches above average in March, 0.75 inches above average in April, 1.15 inches above average in May, and 0.35 inches below average in June. Soil type was Hagerstown silt loam in Centre and Lancaster Counties. Conventional tillage was used in both locations. The previous crop was oats in Centre County and soybean in Lancaster County. Nitrogen was applied in the spring at the rate of 30 and 50 pounds per acre to barley and wheat, respectively. Winter barley was planted on September 19 and winter wheat on

October 3 in Centre County. Winter wheat and winter barley were planted on October 9 in Lancaster County. Winter barley in Centre County was not harvested due to plant sterility with all varieties. Winter wheat was harvested on July 22 in Centre County. In Lancaster County, winter barley was harvested on June 20 and winter wheat on July 9.

This is a progress report of cooperative investigation; interpretations of these data may be modified with additional experimentation. Therefore, publication, display or distribution of data or statements herein should not be made without approval of the cooperating agency or agencies concerned.

### **Acknowledgments.**

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Table 1. Performance summary of winter barley varieties in Lancaster County, Pennsylvania, 2002.

<b>Variety</b>	<b>Grain Yield (bu/A)</b>	<b>Bushel Weight (lb/bu)</b>	<b>Plant height (in)</b>	<b>Lodging (%)</b>
<b>PA 8950-9</b> <sup>a</sup>	116	51.4	40	
<b>PA 8750-296</b> <sup>a</sup>	115	51.0	40	
<b>PA 8649-131</b> <sup>a</sup>	114	52.2	39	
<b>VA 97B-388</b> <sup>a</sup>	111	52.3	35	5
<b>Pennbar 66</b> <sup>a</sup>	105	51.4	39	
<b>PA 9550-149</b>	104	50.2	35	13
<b>PA 8649-95</b> <sup>a</sup>	103	50.8	39	6
<b>PA 9550-151</b>	101	50.2	37	13
<b>VA 97B-176</b> <sup>a</sup>	97	51.0	31	68
<b>Price</b> <sup>a</sup>	96	50.0	32	31
<b>PA 9550-157</b>	95	50.3	38	9
<b>Pennco</b>	92	46.9	36	33
<b>Callao</b> <sup>a</sup>	90	51.0	29	95
<b>Nomini</b>	90	48.6	37	
<b>PA 9349-73</b>	87	50.1	39	9
<b>VA 00H-10</b> <sup>* a</sup>	85	59.2	34	11
<b>Catchpenny</b>	85	47.2	33	5
<b>VA 00H-137</b> <sup>* a</sup>	83	58.6	33	40
<b>Barsoy</b> <sup>a</sup>	81	52.3	37	28
<b>SC 890595</b> <sup>* a</sup>	77	59.2	34	8
<b>Average</b>	96	52	36	25
<b>LSD (0.05)</b>	12	0.8	2	
<b>CV %</b>	8	1.1	4	

\* hulless variety

<sup>a</sup> awned variety

Table 2. Two-year performance summary of winter barley varieties in Lancaster County, Pennsylvania, 2001-2002.

<b>Variety</b>	<b>Grain Yield (bu/A)</b>	<b>Bushel Weight (lb/bu)</b>	<b>Plant height (in)</b>
<b>PA 8950-9<sup>a</sup></b>	98	52.2	35
<b>PA 8649-131<sup>a</sup></b>	97	52.4	35
<b>VA 97B-388<sup>a</sup></b>	95	53.0	30
<b>PA 9550-151</b>	94	50.3	33
<b>PA 9550-149</b>	93	50.7	33
<b>PA 8649-95<sup>a</sup></b>	92	51.6	34
<b>Pennbar 66<sup>a</sup></b>	91	51.8	35
<b>PA 9550-157</b>	88	50.4	33
<b>Price<sup>a</sup></b>	85	51.6	28
<b>VA 97B-176<sup>a</sup></b>	85	52.6	28
<b>Pennco</b>	85	48.3	31
<b>Nomini</b>	83	48.9	34
<b>Callao<sup>a</sup></b>	82	52.6	26
<b>Barsoy<sup>a</sup></b>	80	53.0	34

<sup>a</sup> awned variety

Table 3. Three-year performance summary of winter barley varieties in Lancaster County, Pennsylvania, 2000-2002.

<b>Variety</b>	<b>Grain Yield (bu/A)</b>	<b>Bushel Weight (lb/bu)</b>	<b>Plant height (in)</b>
<b>PA8649-95<sup>a</sup></b>	96	50.0	35
<b>PA8649-131<sup>a</sup></b>	96	50.9	35
<b>PA8950-9<sup>a</sup></b>	95	51.0	36
<b>Pennbar 66<sup>a</sup></b>	92	50.4	35
<b>PA9550-151</b>	86	48.8	35
<b>Nomini</b>	84	47.9	36
<b>PA9550-157</b>	82	48.9	35
<b>Pennco</b>	82	47.2	33
<b>Callao<sup>a</sup></b>	79	51.8	28
<b>Barsoy<sup>a</sup></b>	78	52.3	35

<sup>a</sup> awned variety

Table 4. Performance of soft red winter wheat varieties and one winter triticale variety in Lancaster County, Pennsylvania, in 2002.

Variety	Grain Yield (bu/A)	Bushel Weight (lb/bu)	Plant height (in)	Lodging %
Valor	103	59.7	42	7
25R37	98	60.2	39	
Trical 336 Triticale <sup>a</sup>	95 *	54.3	49	
USG 3408	94	59.0	40	
Honey <sup>a</sup>	94	57.3	39	
McCormick	93	61.8	36	
NK Coker 9025	93	57.9	39	3
Mendon Red Wheat	92	56.9	47	
M 94*1549-1 <sup>a</sup>	91	59.8	37	
Featherstone 520 <sup>a</sup>	91	60.6	39	
Hopewell	90	57.5	39	
25R78 <sup>a</sup>	90	58.7	38	
MD 71-5 <sup>a</sup>	89	58.2	37	
Freedom	89	56.9	40	
NK Coker 9663	89	58.6	43	
Roane	89	60.7	37	
NK Coker 9184	89	60.6	37	
Genesis 9953 Red Wheat	89	56.5	42	
Wilken 204	88	58.0	43	
Wilken 132	88	59.0	41	
Patton	88	58.2	40	
MDV 11-52	88	58.0	35	
Tribute	87	61.7	36	
Wilken 154	87	59.2	42	2
Wilken 121	85	58.2	39	
NK Century II	85	59.1	40	
Sisson	85	57.9	36	
Bravo	85	58.0	40	
Pennmore	83	59.6	45	
PA 158	81	57.4	44	
Daisy	81	56.0	38	
APK 30-W	80	58.9	42	
Wilken 113 <sup>a</sup>	80	60.8	43	
Elkhart <sup>a</sup>	77	60.1	43	
NK Coker 9474	77	58.4	39	
Redcoat	76	59.5	51	
<b>Average</b>	88	58.7	41	
<b>LSD (0.05)</b>	7	0.6	2	
<b>CV %</b>	7	0.9	3	

\* 114 bu/A based on 50 lb/bu weight.

<sup>a</sup> awned variety

Table 5. Two-year performance summary of soft red winter wheat varieties in Lancaster County, Pennsylvania, in 2001-2002.

Variety	Grain Yield (bu/A)	Bushel Weight (lb/bu)	Plant height (in)
<b>25R37</b>	84	60.3	35
<b>Honey<sup>a</sup></b>	80	57.4	35
<b>USG 3408</b>	80	59.1	37
<b>Mendon Red Wheat</b>	80	57.1	42
<b>Featherstone 520<sup>a</sup></b>	79	60.6	36
<b>Wilken 132</b>	79	59.2	39
<b>Genesis 9953 Red Wheat</b>	78	56.5	38
<b>Patton</b>	77	58.4	37
<b>Roane</b>	76	60.5	34
<b>Sisson</b>	76	58.9	33
<b>Wilken 204</b>	75	58.0	40
<b>MDV 11-52</b>	75	58.1	31
<b>APK 30-W</b>	75	59.0	38
<b>Tribute</b>	74	61.6	33
<b>Wilken 121</b>	73	58.4	37
<b>Wilken 154</b>	73	59.2	40
<b>Hopewell</b>	73	57.6	35
<b>Elkhart<sup>a</sup></b>	70	59.9	39
<b>Redcoat</b>	64	59.4	47

<sup>a</sup> awned variety

Table 6. Three-year performance summary of soft red winter wheat varieties in Lancaster County, Pennsylvania, 2000-2002.

Variety	Grain Yield (bu/A)	Bushel Weight (lb/bu)	Plant height (in)
<b>USG 3408</b>	84	59.1	36
<b>Wilken132</b>	82	59.1	38
<b>Patton</b>	78	57.9	35
<b>Wilken204</b>	77	58.1	39
<b>Featherstone 520<sup>a</sup></b>	77	59.6	35
<b>Roane</b>	74	59.9	32
<b>Wilken121</b>	73	58.1	35
<b>Elkhart<sup>a</sup></b>	72	59.4	37
<b>Wilken154</b>	69	58.3	38
<b>Redcoat</b>	61	58.3	45

<sup>a</sup> awned variety

Table 7. Performance of soft red winter wheat varieties and one winter triticale variety in Centre County, Pennsylvania, in 2002.

Variety	Grain Yield (bu/A)	Bushel Weight (lb/bu)	Plant height (in)	Lodging (%)	Maturity	PM	SN
Hopewell	74	57.9	39		5/27	MS	MS
Wilken 154	73	58.4	42		5/28	MS	MR
Roane	73	60.3	37	4	5/26	MR	MR
Freedom	72	56.8	41		5/27	MR	MR
Mendon Red Wheat	72	56.8	44	13	5/27	MR	MS
Valor	69	56.5	41	38	5/28	R	S
NK Coker 9184	68	60.5	38		5/26	MR	MR
Daisy	68	57.4	38		5/26	MR	S
Genesis 9953 Red Wheat	67	56.5	40	18	5/24	MS	MS
Bravo	66	57.5	40	7	5/26	S	MS
25R37	65	58.8	39		5/26	MR	MR
USG 3408	64	58.4	38	23	5/25	MS	MR
Wilken 121	64	57.3	38	32	5/26	S	MS
Wilken 113 <sup>a</sup>	62	59.8	41		5/30	S	S
APK 30-W	62	58.5	42	10	5/26	S	MR
Patton	62	57.6	40	6	5/28	MS	MR
Honey <sup>a</sup>	61	56.5	39	3	5/25	MR	MR
Redcoat	61	58.4	47	4	5/30	MS	MR
Penmore	61	58.1	42	34	5/27	MS	MS
Nk Coker 9025	61	56.7	38	43	5/27	MS	MR
Wilken 132	60	58.6	42	8	5/26	S	MR
McCormick	60	60.8	36		5/25	R	MR
Trical 336 Triticale <sup>a</sup>	59 <sup>*</sup>	53.0	50		5/24	R	MR
PA 158	58	57.7	41	27	5/30	S	S
Sisson	56	57.6	36		5/24	R	MR
NK Coker 9663	56	59.3	40		5/26	S	MS
M 94*1549-1 <sup>a</sup>	55	58.4	39		5/25	MR	S
Tribute	55	60.7	37		5/26	R	MR
NK Coker 9474	55	58.9	37		5/25	S	S
Wilken 204	55	57.1	41		5/26	S	MS
Elkhart <sup>a</sup>	54	59.1	41		5/26	S	S
25R78 <sup>a</sup>	51	57.8	38		5/26	MS	S
MDV 11-52	50	58.3	34		5/26	R	MR
NK Century II	50 <sup>**</sup>	58.8	37	2	5/24	S	MS
Featherstone 520 <sup>a</sup>	44 <sup>**</sup>	58.6	37	3	5/25	R	MR
MD 71-5 <sup>a</sup>	43 <sup>**</sup>	57.4	36		5/26	R	MR
<b>Average</b>	61	58.1	39				
<b>LSD (0.05)</b>	8	1.0	2				
<b>CV %</b>	11	1.5	3				

\* 71 bu/A based on 50 lb/bu weight

\*\* frost damage observed

<sup>a</sup> awned variety

**PM** = Powdery Mildew

**SN** = Stagonospora leaf blotch

Key: **R** = resistant, **MR** = moderately resistant,

**MS** = moderately susceptible, and **S** = susceptible.

Table 8. Two-year performance summary of soft red winter wheat varieties in Centre County, Pennsylvania, in 2001-2002.

<b>Variety</b>	<b>Grain Yield (bu/A)</b>	<b>Bushel Weight (lb/bu)</b>	<b>Plant height (in)</b>
Hopewell	76	58.4	38
Roane	72	61.2	36
Honey <sup>a</sup>	69	57.6	37
Wilken 154	69	59.3	40
25R37	69	60.2	36
Sisson	67	59.0	34
Genesis 9953 Red Wheat	67	57.3	39
USG 3408	67	59.3	37
Tribute	65	61.8	35
Patton	65	58.2	38
Wilken 121	65	58.5	38
Mendon Red Wheat	65	57.1	44
Wilken 132	61	59.6	41
APK 30-W	61	59.5	40
MDV 11-52	58	59.0	32
Wilken 204	58	58.3	41
Elkhart <sup>a</sup>	57	60.2	40
Featherstone 520 <sup>a</sup>	55	60.1	36
Redcoat	52	59.3	45

<sup>a</sup> awned variety

Table 9. Three-year performance summary of soft red winter wheat varieties in Centre County, Pennsylvania, 2000-2002.

<b>Variety</b>	<b>Grain Yield (bu/A)</b>	<b>Bushel Weight (lb/bu)</b>	<b>Plant height (in)</b>
Roane	78	60.8	34
USG 3408	75	59.2	36
Patton	72	58.3	36
Wilken121	72	58.4	37
Wilken154	71	59.2	38
Wilken132	70	59.4	39
Elkhart <sup>a</sup>	66	60.1	38
Featherstone 520 <sup>a</sup>	66	60.1	35
Wilken204	65	58.3	40
Redcoat	57	59.3	44

<sup>a</sup> awned variety

Table 10. Source or origin of winter wheat and barley varieties evaluated in Pennsylvania in 2002.

Entry	Source or origin
<b><i>Wheat and Triticale</i></b>	
Honey, Daisy, Valor	Sunbeam Extract Co., Wooster, OH
Featherstone 520	Featherstone Farm Seed, Amelia, VA
Patton, Elkhart, M94*1549-1	AgriPro Seeds, Lafayette, IN
APK-30W	Agway, York, PA
Sisson, Roane, Tribute, McCormick	Virginia AES
25R78, 25R37	Pioneer Hi-Bred International, Inc., Tipton, IN
USG 3408	Unisouth Genetics, Inc., Nashville, TN
Wilken 132, Wilken 154, Wilken 204, Wilken 121, Wilken 113	Wilken Seed Grains, Inc., Pontiac, IL
Hopewell, Bravo, Freedom	Ohio AES
MDV11-52, MD71-5	Maryland AES
Trical 336 Triticale, Mendon Red Wheat, Genesis 3953 Red Wheat	Agriculver Seeds, Trumansburg, NY
NK Coker 9663, NK Coker 9025, NK Coker 9184, NK Coker 9474, NK Century II	Syngenta Seeds, Inc., Winterville, NC
PA 158, Penmore	Pennsylvania AES
Redcoat	Indiana AES
<b><i>Winter Barley</i></b>	
Barsoy	Kentucky AES
Callao, Nomini, Price, VA97B-176, VA97B-388, VA 00H-10, VA 00H-137	Virginia AES
Pennco, Pennbar 66, PA 8649-131, PA 8950-9, PA 9550-151, PA 9550-157, PA 9550-149, PA 8750-296, PA 9349-73, PA 8649-95	Pennsylvania AES
Catchpenny	Maryland AES
SC 890595	South Carolina AES