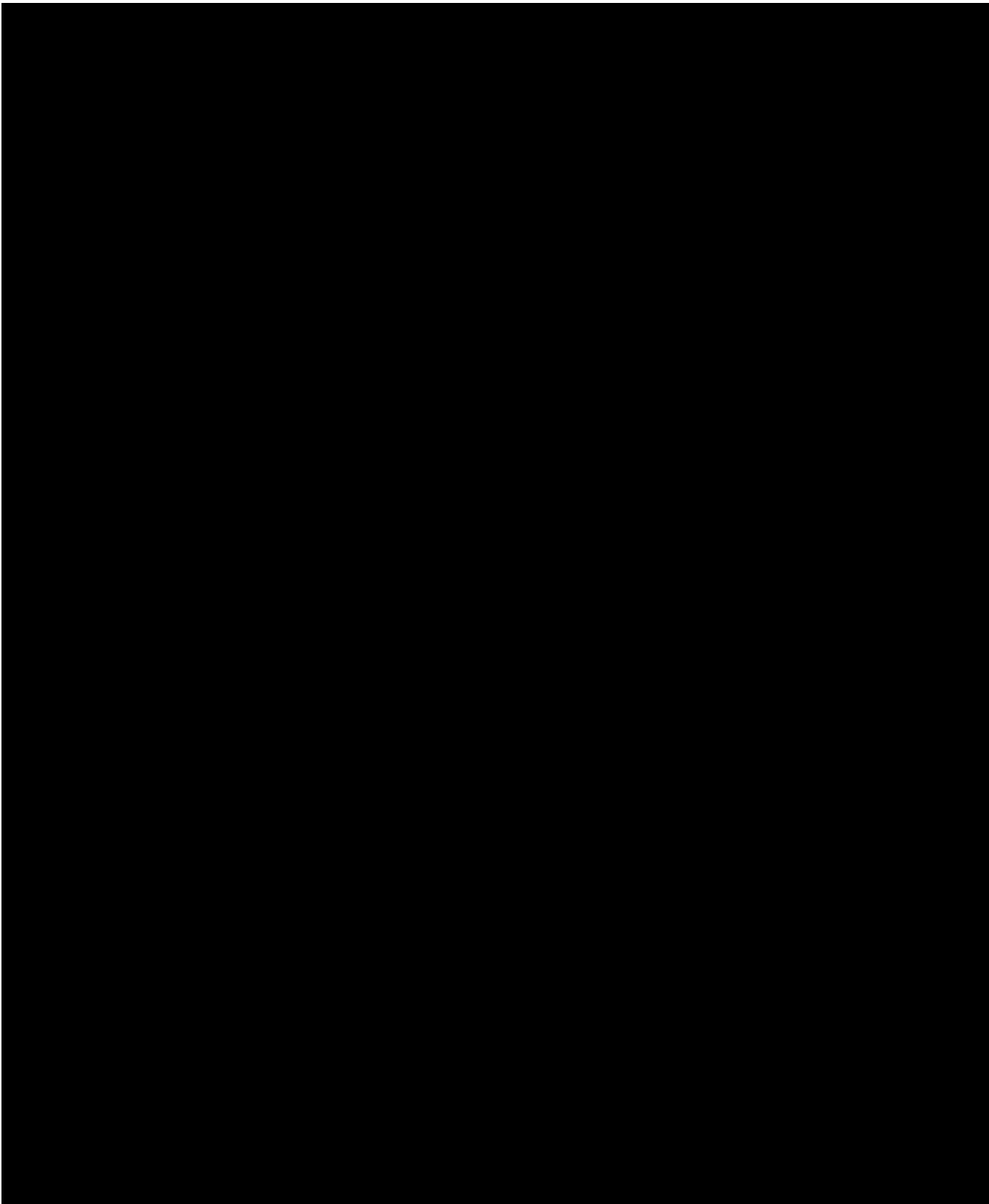


# Grains and Other Agronomic Crops



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**COMMERCIAL BARLEY ENTRIES**

Virginia Tech and Virginia Crop Improvement Association, 9142 Atlee Station Road, Mechanicsville, VA 23116 - Callao, Doyce, Nomini, Price, and Thoroughbred.

**COMMERCIAL AND EXPERIMENTAL WHEAT ENTRIES**

AgriPro Wheat, PO Box 411, 520 East 1050 South, Brookston, IN 47923 – Benton and Crawford.  
 Featherstone Seed Company, 13941 Genito Road, Amelia, VA 23002 - Featherstone 520.  
 University of Georgia, GA Station, 1109 Experiment Street, Griffin, GA 30223 - GA931241E16, GA931233E17, and GA931470E62.  
 University of Maryland, CMREC/Beltsville Facility, 12000 Beaver Dam Road, Laurel, MD 20708 – MD11-52, MD5-46, and MD71-5.  
 Michigan State University, 286 PSSB, East Lansing, MI 48824 - MSU line D8006.  
 North Carolina Foundation Seed Producers, Inc., 8220 Riley Hill Road, Zebulon, NC 27597 – Arcia (triticale).  
 North Carolina State University, 840 Method Rd, Unit 3, Box 7629, Raleigh, NC 27695-7629 – Neuse, NC98-26143, and NC98-24050.  
 Pioneer Hibred International, Inc., Eastern Division, Tipton, IN 47072 - Pioneer Brand 2580, Pioneer Brand 26R24, Pioneer Brand 26R58, and Pioneer Brand 2684.  
 Resource Seeds, Inc., 2355 Rice Pike, Union, KY 41091 - Trical 336, Trical 2115, and Trical 2205 (all triticales).  
 Royster-Clark, Inc., 70 N. Market St., Mt. Sterling, OH 43143 – Tribute (seed available 2003), V9212, and V9301.  
 Southern States Cooperative, PO Box 26234, Richmond, VA 23260 - SS 520, SS 535, SS 550, SS 560.  
 Syngenta Seeds, Inc., PO Box 1240, Winterville, NC 28590 – Century II, Coker 9025, Coker 9184, Coker 9295 and Coker B960457.  
 Uni-South Genetics, 2640-C Nolensville Road, Nashville, TN 37211 - USG 3209, USG 3350, USG 3430, and USG 3650.  
 Virginia Tech and Virginia Crop Improvement Association, 9142 Atlee Station Road, Mechanicsville, VA 23111 – Jackson, McCormick (seed available 2004), Roane, Sisson, and all lines prefixed by VA.

Appreciation is expressed to the Virginia Small Grains Check-Off Board, AGSouth Genetics, AgriPro Wheat, Featherstone Seed, Pioneer Hibred International, Resource Seeds, Southern States Cooperative, Syngenta Seeds, UniSouth Genetics, Western Plant Breeders, and the Virginia Crop Improvement Association for their financial support of the Small Grains Variety Testing Program at Virginia Tech.

Conducted and summarized by the following Virginia Tech employees: Dr. Daniel E. Brann, Extension Agronomist, Grains (retired); Dr. Carl Griffey, Small Grains Breeder; Mr. Harry Behl, Agricultural Supervisor; Ms. Elizabeth Rucker and Mr. Tom Pridgen, Research Associates. Location Supervisors: Mr. Tom Custis (Painter); Mr. Bobby Ashburn (Holland); Mr. Bob Pitman, Mr. Mark Vaughn, Mr. Jason Kenner, and Mr. Charles Sanford (Warsaw); Mr. Bill Wilkinson III and Mr. Bud Wilmouth (Blackstone); Dr. Carl Griffey, Mr. Wynse Brooks, and Mr. Tom Pridgen (Blacksburg); Mr. Robert A. Clark, Mr. Tom Stanley, Richard Fitzgerald (Shenandoah Valley); Mr. David Starner and Mr. Denton Dixon (Orange).

## INTRODUCTION

The following tables present results from barley and wheat varietal tests conducted in Virginia in 2001-2003. Yield data are given for individual locations; yield and other performance characteristics are averaged over the number of locations indicated. Performance of a given variety often varies widely over locations and years which makes multiple location-year averages a more valid indication of expected performance than data from a single year or location. All tests in 2001-2003 were grown in seven-inch rows planted at 22 seeds per row foot with the exception of Blacksburg and Warsaw which were grown in six-inch rows at 22 seeds per row foot. The plots were trimmed during the winter to 9 feet in length. Details about management practices for barley and wheat are included in the bulletin. The wheat and barley tests at Holland and Blackstone were not planted due to wet soils until early December. Excess rain during the winter on these soils resulted in poor and variable crop development. The plots were therefore abandoned.

## BARLEY VARIETIES

### Hulled Barley

Virginia is an excellent place to produce barley. It fits well into cropping systems and has a yield potential in excess of 100 bushels per acre as shown by the three year averages of current varieties and Virginia Tech lines. Even in an extremely wet harvest season newer hulled barley lines had average test weights exceeding 46 pounds per bushel.

Hulled barley makes good feed for horses, dairy animals, beef, sheep, and some laying hens. The problem is that these industries in Virginia and the mid-Atlantic region use only limited quantities of barley. Profitable barley production on over 50,000 acres in Virginia is going to require revival of international market opportunities and/or development of barley varieties that livestock feeders want to buy.

Virginia and the mid-Atlantic region have produced low test weight, poor quality barley for too many years. No one wants to buy barley with 43-45 pound test weight like we have been growing with awnletted varieties such as Wysor, Nomini, or Starling. The genetic test weight of these varieties is about 48 pounds/bushel but it decreases rapidly with drought during grain fill or rainfall during harvest. **Cash grain barley producers must switch from varieties such as Nomini and Starling to Price. This is the only way we can possibly compete in export markets. This plea is made for the entire mid-Atlantic region since the Perdue facility at Norfolk receives grain from the whole region. It will not be sufficient for Virginia farmers to switch since their grain will be blended with barley from the entire mid-Atlantic region.**

Virginia Tech released a new barley variety named Price in 2002. Price averaged 107 bushels per acre the past two years at Warsaw compared to 103 bushels per acre for Callao. The major advantage of Price over Callao is improved standability. Price, like Callao, has excellent test weight in the 50-51 pounds per bushel range in good seasons and above 45 pounds per bushel in poor harvest conditions. Price will be available to producers in the fall of 2003. The other notable on hulled barley is the new release from Virginia Tech, Thoroughbred (old VA97B-388.) This exciting, new hulled barley has plump, bright color, beautiful seed with test weights in the 50 pounds per bushel range. Even in the extremely poor harvest conditions of 2003, Thoroughbred had an average test weight of 46.7 pounds per bushel. It is also the top-yielding variety statewide each of the past three years with a three-year statewide average of 116 bushels per acre. Thoroughbred has large awns that are easily removed at harvest because they break easily during harvesting. Markets for this excellent quality hulled barley need to be developed.

### Hulless Barley

Hulless barley grows and looks like regular barley until it is almost mature. When almost mature, the glumes start to separate. The grain is separated from the glumes when combined. Grain of hulless barley looks more like wheat than traditional barley.

Hulless barley is creating considerable interest among livestock feeders. Samples of Doyce, the new hulless barley released by Virginia Tech, have been shared with some representatives of the poultry, swine, dairy, equine and beef industries. A new publication, "Hulless Barley Marketing Initiative for the Mid-Atlantic Poultry and Swine Industries" relates current information about feeding hulless barley to swine and poultry. It is available in limited quantities (request a copy by contacting Elizabeth Rucker at (540) 231-4490 or [egrucker@vt.edu](mailto:egrucker@vt.edu).)

As you can see from Table 1, the yields of current hulless barley lines are generally about 20 percent lower than those of hulled barley lines. This is expected since the hull makes up about 15 percent of the weight of traditional barley and the breeding program for hulless barley is relatively new. Rapid progress of this new program at Virginia Tech by Dr. Carl Griffey's small grains breeding group is evident when two-year average yields of South Carolina's line H585 at 71 bushels per acre are compared with those of Doyce at 78 bushels per acre and VA00H-65 at 83 bushels per acre. Test weight of hulless barley is generally in the 56 to 60 pounds per bushel range. The poor harvest conditions in 2003 produced test weights in the 52 to 55 pounds per bushel range. Limited quantities of Doyce will be available to seedsmen in the fall of 2003 and to producers in the fall of 2004. Standability of Doyce and most of the hulless barley lines is good.

Barley may still have a bright future in Virginia and the mid-Atlantic region if we strive to produce what the customer wants. Let's improve our barley quality and see what happens. Hopefully we can take advantage of the excellent hulless barley lines being developed at Virginia Tech by Dr. Griffey's "barley team" of Wynse Brooks and Mark Vaughn. We have a great deal to lose if barley becomes obsolete and no longer is a viable crop in our rotation system.

**SUMMARY OF BARLEY MANAGEMENT PRACTICES FOR THE 2003 HARVEST SEASON**

**Blacksburg** - Planted October 19, 2002. Preplant fertilizer was 25-70-60 on October 8, 2002. Site was fertilized with 80-0-0 plus 0.6 oz Harmony Extra7 on March 23, 2003. Harvest occurred on June 15, 2003.

**Blackstone** - Planted December 3, 2002. Plots were abandoned.

**Painter** - Planted November 26, 2002. Preplant fertilizer was 500 lb 5-10-10 applied October 16, 2002. One hundred lb N and 0.5 oz Harmony Extra7 were applied March 13, 2003. Malathion® 57EC was applied at 1.5 pt May 6, 2003. Harvest occurred on June 25, 2003.

**Warsaw** - Planted October 23, 2002. Preplant fertilizer was 30-60-60 applied October 2, 2002. Fertilization at 40 lb N using 24-0-0-3 was applied January 15, 2003. Harmony Extra7 at 0.6 was applied March 18, 2003. Fertilization at 40 lb N using 24-0-0-3 was applied March 24, 2003. Warrior® at 2.56 oz was applied May 2, 2003. Harvest occurred June 23, 2003.

**Orange** - Planted October 9, 2002. Preplant fertilization was 500 lb 5-10-10 with 15 lb S on September 19, 2002. Sixty lb N and Harmony Extra® at 0.4 oz were applied March 11, 2003. Harvest occurred on June 23, 2003.

**Table 1. Yield performance (bu/acre) of entries in the Virginia Tech Barley Test, 2003 harvest.\***

<b>Hulled Lines</b>	<b>Blacksburg</b>		<b>Orange</b>		<b>Painter</b>		<b>Warsaw</b>		<b>Average</b>	
<b>THOROUGHbred</b>	91	+	104		92		96	+	96	+
VA96-44-304	83		95		109		79		92	+
VA97B-175	87	+	91		104		83		91	
VA99B-161	77		100		98		91	+	91	
VA01B-26	84		92		105		85		91	
<b>NOMINI</b>	77		91		96		95	+	90	
VA97B-176	78		91		107		79		89	
VA00B-182	82		90		108		77		89	
<b>PRICE</b>	64		102		105		82		88	
VA98B-213	75		97		101		79		88	
VA99B-303	72		99		110		72		88	
VA98B-208	81		85		100		82		87	
VA99B-206	78		94		106		72		87	
<b>BARSOY</b>	70		92		106		75		86	
VA98B-199	62	-	100		96		85		86	
VA99B-125	79		85		102		80		86	
VA00B-279	81		83		89	-	90	+	86	
<b>CALLAO</b>	74		93		98		75		85	
VA98B-524	66		87		105		74		83	
VA00B-91	63		72	-	99		72		77	-
VA92-42-46	58	-	90		85	-	67	-	75	-
<b>WYSOR</b>	56	-	86		80	-	63	-	71	-
Average	74		92		100		79		86	
LSD (0.05)	12		15		11		9		6	
C.V.	11		11		8		8		10	

**Table 1. Yield performance (bu/acre) of entries in the Virginia Tech Barley Test, 2003 harvest, continued.\***

<b>Hulless Lines</b>	<b>Blacksburg</b>	<b>Orange</b>	<b>Painter</b>	<b>Warsaw</b>	<b>Average</b>
VA00H-65	66 +	83	73	60	71 +
VA00H-89	59	85	78	65	71 +
VA01H-13	56	74	87 +	63	70
VA01H-26	56	75	87 +	63	70
VA00H-99	58	84	75	61	69
VA01H-37	55	76	87 +	60	69
SC880248	64	78	70	61	68
VA00H-88	63	72	70	66 +	68
VA00H-97	61	77	72	61	68
VA00H-72	58	77	75	59	67
VA00H-74	60	78	67	63	67
<b>DOYCE</b>	52	74	80	63	67
VA01H-44	55	77	79	57	67
VA01H-124	60	73	74	64	67
VA00H-70	58	78	70	60	66
<b>H585</b>	55	78	68	58	65
VA00H-8	54	79	71	56	65
VA00H-32	55	75	74	56	65
VA01H-14	50	75	77	59	65
VA01H-96	55	71	81	50 -	64
VA01H-133	52	71	82	53	64
VA00H-12	58	74	66	54	63
VA01H-128	53	69	74	56	63
VA01H-122	48	63 -	70	59	60 -
VA00H-10	50	72	59 -	56	59 -
VA01H-5	43 -	66	74	53	59 -
Average	56	75	74	59	66
LSD (0.05)	9	12	9	7	5
C.V.	11	11	8	8	10

\* Varieties are ordered by descending statewide yield averages. A plus or minus sign indicates a performance significantly above or below the test average, where hulled and hulless lines have been statistically analyzed separately.

Hulless barley is similar to hulled barley except the glumes thrash free of the seed when combined. Since the hulls make up 15% of the dry grain weight, yields of hulless barley are expected to be 15% lower than hulled barley.

**Table 2. Two-year average yield performance (bu/acre) of entries in the Virginia Tech Barley Tests, 2002 and 2003 harvests.\***

<b>Hulled Lines</b>	Blacksburg		Orange		Painter		Warsaw		Average	
<b>THOROUGHbred</b>	116	+	105		95		127	+	110	+
VA99B-303	96		102		118	+	111		107	+
<b>NOMINI</b>	107	+	95		95		119	+	105	+
VA97B-176	95		96		106		111		102	
VA96-44-304	93		104		106		106		102	
VA99B-161	92		108		94		115		102	
VA97B-175	102	+	93		101		110		101	
VA00B-182	101	+	96		103		107		101	
VA98B-213	94		104		97		109		101	
<b>PRICE</b>	84	-	109	+	101		107		100	
VA99B-125	96		90		97		112		99	
VA99B-206	89		92		105		111		99	
VA98B-199	88		104		92		113		99	
VA98B-208	89		89		101		111		98	
VA98B-524	80	-	90		110	+	111		98	
<b>CALLAO</b>	89		97		93		103	-	95	-
<b>WYSOR</b>	88		94		82	-	95	-	90	-
VA92-42-46	82	-	92		89	-	99	-	90	-
Average	93		98		99		110		100	
LSD (0.05)	7		11		9		7		4	
C.V.	8		11		9		6		9	
<b>Hulless Lines</b>	Blacksburg		Orange		Painter		Warsaw		Average	
VA00H-65	76	+	87	+	78		92		83	+
VA00H-88	74	+	78		76		97	+	81	+
VA00H-99	70		87	+	76		92		81	+
VA00H-74	71		81		70		89		78	
<b>DOYCE</b>	62	-	76		82	+	94		78	
VA00H-70	69		78		72		91		77	
SC880248	64		76		77		88		76	
VA00H-12	71		70	-	76		82	-	74	-
VA00H-10	65		71		65	-	88		72	-
VA00H-32	63		64	-	75		86		72	-
<b>H585</b>	58	-	75		68	-	83		71	-
Average	68		77		74		89		77	
LSD (0.05)	6		7		6		7		3	
C.V.	9		9		8		7		9	

\* Varieties are ordered by descending statewide yield averages. A plus or minus sign indicates a performance significantly above or below the test average, where hulled and hulless lines have been statistically analyzed separately.

Hulless barley is similar to hulled barley except the glumes thrash free of the seed when combined. Since the hulls make up 15% of the dry grain weight, yields of hulless barley are expected to be 15% lower than hulled barley.

**Table 3. Three-year average yield performance (bu/acre) of entries in the Virginia Tech Barley Tests, 2001, 2002, and 2003 harvests.\***

<b>Hulled Lines</b>	Blacksburg		Orange		Painter		Warsaw		Average	
<b>THOROUGHbred</b>	115	+	104	+	110		132	+	116	+
VA97B-176	104		93		115	+	120		109	+
<b>NOMINI</b>	108	+	93		102		125	+	108	
VA97B-175	108	+	92		108		117		107	
VA98B-213	100		99		107		117		106	
VA99B-161	97		106	+	102		119		106	
VA96-44-304	91	-	99		115	+	117		106	
VA98B-208	95		89		113		120		105	
<b>PRICE</b>	92	-	105	+	111		115		105	
VA99B-125	104		87		103		120		104	
VA98B-199	95		101		100		122	+	104	
VA99B-206	95		89		112		115		103	
<b>CALLAO</b>	95		92		104		110	-	101	-
<b>WYSOR</b>	91	-	89		91	-	106	-	95	-
VA92-42-46	88	-	92		92	-	107	-	95	-
Average	99		95		106		117		105	
LSD (0.05)	6		9		8		5		4	
C.V.	8		11		10		6		9	
<b>Hulless Lines</b>	Blacksburg		Orange		Painter		Warsaw		Average	
<b>DOYCE</b>	73		75		91	+	102	+	86	+
SC880248	71		78		83		95		82	
VA00H-12	78	+	71		81		91		81	
<b>H585</b>	68		73		77	-	91		78	-
VA00H-32	70		66	-	79		91		77	-
Average	72		73		82		94		81	
LSD (0.05)	5		7		5		4		3	
C.V.	8		11		8		6		9	

\* Varieties are ordered by descending statewide yield averages. A plus or minus sign indicates a performance significantly above or below the test average.





**Table 4. Performance summary of entries in the Virginia Tech Barley Test, 2003 harvest, continued.\***

Hulless Lines	Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Mar31+)		Height (In)		Leaf Rust		Net Blotch		Septoria		Lodging (0.2-10)	
	(4)	(4)	(3)	(3)	(1)	(3)	(1)	(4)								
VA00H-65	71	+	55.2	+	30	+	34	-	7	+	4	0	-	2.5		
VA00H-89	71	+	54.1		31	+	35		7	+	4	1		1.8	-	
VA01H-13	70		52.9	-	30	+	35		1	-	4	1		3.6		
VA01H-26	70		52.9	-	30	+	33	-	0	-	3	-	2	+	2.9	
VA00H-99	69		54.9	+	31	+	34	-	7	+	4	1		1.6	-	
VA01H-37	69		51.7	-	30	+	33	-	1	-	4	1		4.3	+	
SC880248	68		54.0		29		38	+	7	+	4	1		3.8	+	
VA00H-88	68		54.2		30	+	34	-	6	+	4	1		2.3		
VA00H-97	68		54.8	+	31	+	34	-	6	+	4	1		2.1		
VA00H-72	67		53.9		30	+	35		7	+	4	1		3.0		
VA00H-74	67		55.0	+	30	+	34	-	7	+	4	1		2.2		
<b>DOYCE</b>	67		52.5	-	30	+	35		0	-	4	2	+	3.4		
VA01H-44	67		52.5	-	31	+	32	-	0	-	3	-	2	+	3.3	
VA01H-124	67		54.5	+	28	-	29	-	5	+	3	-	2	+	1.2	-
VA00H-70	66		54.6	+	30	+	34	-	7	+	4	1		2.2		
<b>H585</b>	65		54.3		28	-	36	+	8	+	4	0	-	2.9		
VA00H-8	65		54.4		28	-	36	+	7	+	4	1		2.9		
VA00H-32	65		53.7		27	-	33	-	5	+	4	1		3.0		
VA01H-14	65		52.8	-	30	+	37	+	0	-	4	2	+	4.1	+	
VA01H-96	64		53.3		27	-	34	-	0	-	6	+	4	+	4.1	+
VA01H-133	64		49.4	-	27	-	36	+	0	-	5	+	3	+	4.0	+
VA00H-12	63		54.3		29		37	+	6	+	3	-	0	-	5.0	+
VA01H-128	63		54.5	+	31	+	34	-	2	-	4	2	+	0.9	-	
VA01H-122	60	-	55.4	+	31	+	38	+	1	-	4	2	+	2.2		
VA00H-10	59	-	53.4		31	+	34	-	6	+	4	0	-	2.3		
VA01H-5	59	-	53.0		31	+	34	-	1	-	4	1		2.7		
Average	66		53.7		29		35		4		4	1		2.9		
LSD (0.05)	5		0.8		1		1		1		1	1		0.9		
C.V.	10		2.1		3		3									

\* Varieties are ordered by descending statewide yield averages. A plus or minus sign indicates a performance significantly above or below the test average, where hulled and hulless lines have been statistically analyzed separately.

The number in parentheses below column headings indicates the number of locations on which data are based.

The 0-9 ratings indicate degree to which plant is affected, where 0=none and 9=total plant affected.

Belgian Lodging Scale = Area X Intensity X 0.2. Area = 1-10, where 1 is barley unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is barley standing upright and 5 is barley totally flat.

Hulless barley is similar to hulled barley except the glumes thrash free of the seed when combined.

Since the hulls make up about 15% of the dry grain weight, yields of hulless barley are expected to be about 15% lower than hulled barley.

## WHEAT VARIETIES

When considering wheat variety performance, it is necessary to take seed treatment used on the varieties into consideration. Entries in this test have different seed treatments that may greatly impact performance. Seed treatments are indicated by an acronym in parentheses following the name. For example, USG3209 (RT) indicates that this entry was treated with raxil and thiram. "B" is Baytan®, "D" is Dividend®, "R" is raxil, and "T" is thiram. Virginia Tech experimental lines and some of the public varieties such as Massey were treated with raxil and thiram.

Selecting the best wheat varieties is somewhat challenging but becomes easier with adequate information of performance over multiple environments. The past two seasons across Virginia have provided the opportunity to evaluate daylength sensitivity, spring freeze damage, glume blotch, scab (*Fusarium* head blight), and general plant health in an excessively wet harvest season. We are pleased to report that many newer wheat varieties and lines performed well in all environments tested!

The future for wheat varieties adapted to Virginia conditions is very positive. Dr. Carl Griffey, Virginia Tech's small grains breeder, has many lines starting with "VA" shown in the table that are in the top-yielding group with good disease resistance. He is also ready for specialty markets as shown by excellent performance of white-seeded lines such as VA97W-375WS.

The top-yielding released varieties in 2003 and the previous two years are Southern States' SS520 and Royster Clark's Tribute. Both have excelled in the Coastal Plain, Piedmont, and Valley regions. SS520 is a relatively early wheat that is about two inches taller than average with good test weight and good standability. It has good powdery mildew resistance, relatively good resistance to glume blotch, but is susceptible to leaf and stripe rust. SS520 has yielded above average in the notill test at Warsaw over the past three years but produced only average yields of 78 bushels per acre in 2003. Tribute, a new variety marketed by Royster Clark, has excellent test weight, is relatively short, has good standability and is of medium maturity. Tribute is daylength sensitive which can reduce the probability of excessive growth when planted timely to early during warm winters. Tribute has excellent resistance to powdery mildew, leaf rust, and barley yellow dwarf. It has moderate resistance to stripe rust and glume blotch. Tribute has also been a top-yielding variety when planted notill into corn residue and has moderate resistance to scab spread in the head.

McCormick, a new release from Virginia Tech that will be available to producers for the fall of 2004, Sisson, Southern States' SS560 and SS550, and Pioneer Brand 26R24 have statewide averages over 80 bushels per acre the past three years and all were average or above in yield in 2003. Royster Clark's V9212 has only been tested one year. It was average in yield statewide and average in yields in the Coastal Plain. McCormick is short with good standability, has excellent test weight and excellent resistance to powdery mildew and leaf rust. It has above average resistance to glume blotch and scab. Refer to Table 9 for ratings of test weight, maturity, height, lodging, and disease of the other varieties listed above.

Released varieties producing average statewide yields over the past two seasons were Century II, Pioneer Brand 2580, Jackson, USG 3209, USG 3650, Featherstone 520, Pioneer Brand 2684, Jackson, and SS535. Some of these varieties performed very well at one or more test locations so refer to specific location yields listed in Table 5.

Released varieties yielding less than average the past two seasons include Roane, Coker 9184, Coker 9295, Neuse, Coker 9025, and Massey. Varieties tested for only one year that were less than average in yield include Benton, USG 3350, V9301, USG 3430, and Soissons.

### SUMMARY OF WHEAT MANAGEMENT PRACTICES FOR THE 2003 HARVEST SEASON

**Blacksburg** - Planted October 15, 2002. Preplant fertilizer was 25-70-60 applied October 8, 2002. Harmony Extra7 was applied at 0.6 oz on March 23, 2003 with 80-0-0. Harvest occurred on July 12, 2003.

**Warsaw** - Planted October 23, 2002. Preplant fertilizer was 30-60-60 applied October 2, 2002. Fungicide plots received 4 oz Tilt® on May 14, 2003. Harmony Extra® at 0.6 oz was applied March 18, 2003. Forty lb N using 24-0-0-3(S) was applied January 15, 2002. Sixty lb N using 24-0-0-3(S) was applied March 24, 2003. Warrior T7 was applied at 2.56 oz on May 2, 2003. Harvest occurred June 26, 2003.

**Blackstone** - Planted December 3, 2002. Plots were abandoned.

**Painter** - Planted November 26, 2002. Preplant fertilizer was 500 lb 5-10-10 applied October 16, 2002. One hundred lb N and 0.5 oz Harmony Extra7 were applied March 13, 2003. Malathion® 57EC was applied at 1.5 pt May 6, 2003. Fungicide plots received 4 oz Tilt® on May 7, 2003. Harvest occurred on June 26, 2003.

**Holland** - Planted December 3, 2002. Plots were abandoned.

**Orange** - Planted October 9, 2002. Preplant fertilizer was 500 lb 5-10-10 with 15 lb sulfur applied September 19, 2002. Sixty lb N with Harmony Extra® were applied March 11, 2003. Harvest occurred on June 25, 2003.

**Shenandoah Valley** - Planted October 8, 2002. One hundred lb N and 0.5 oz Harmony Extra7 were applied March 7, 2003. Harvest occurred July 15, 2003.

**Table 5. Yield performance (bushels/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2003 harvest.\***

Line	Coastal Plain Region			Piedmont and Blue Ridge Region				State-wide Average
	Painter	Warsaw	Average	Blacks-burg	Orange	Shenandoah Valley	Average	
<b>SS 520(R)</b>	67 +	81 +	74 +	80 +	93 +	62 +	78 +	77 +
VA97W-375WS	64	83 +	74 +	69 +	80 +	64 +	71 +	72 +
MD11-52(R)	67 +	80 +	73 +	70 +	77	67 +	71 +	72 +
MV5-46	59	76	68	72 +	73	74 +	73 +	71 +
<b>TRIBUTE</b>	66	78 +	72	65	83 +	64 +	71 +	71 +
VA97W-24	63	77	70	73 +	86 +	53	71 +	70 +
VA99W-176	64	81 +	73 +	70 +	80 +	58	69	70 +
VAN98W-342	59	84 +	71	71 +	74	64 +	70 +	70 +
VA98W-631	67 +	80 +	74 +	69 +	74	60	68	70 +
MD71-5	64	80 +	72	71 +	73	61	68	70 +
<b>SS 550(B)</b>	64	72	68	70 +	76	62 +	69	69 +
<b>SISSON</b>	63	65	64	72 +	81 +	56	70 +	68 +
<b>McCORMICK</b>	53	81 +	67	66	83 +	57	69	68 +
VA97W-375RS	63	75	69	66	77	60	68	68 +
VA98W-706	61	78 +	70	67	80 +	55	67	68 +
VA00W-38	58	74	66	64	81 +	60	68	68 +
VA01W-205	60	75	68	71 +	77	54	67	67 +
VAN98W-170WS	59	71	65	68 +	79 +	54	67	66 +
VAN99W-20	62	78 +	70	65	70	57	64	66 +
VA99W-28	62	78 +	70	61	73	58	64	66 +
VA01W-353	62	68	65	67	77	58	67	66 +
<b>SS 560(R)</b>	64	71	68	71 +	73	53	66	66 +
V9212(D)	56	71	63	65	78 +	60	68	66 +
VA01W-18	61	69	65	60	80 +	56	65	65
GA931470E62(D)	56	66	61	62	76	61	66	65
VA98W-335	60	73	67	63	71	57	63	64
VA00W-286	59	77	68	63	70	52	62	64
<b>CRAWFORD</b>	61	72	67	60	75	56	63	64
<b>FEATHERSTONE 520(RT)</b>	64	69	67	64	69	54	62	64
GA931241E16(RT)	60	76	68	59	70	59	63	64
GA931233E17(D)	56	69	62	67	72	57	65	64
<b>PIONEER 26R24(D)</b>	59	73	66	65	77	48	63	64
<b>PIONEER 26R58(D)</b>	54	68	61	66	82 +	50	66	64
<b>CENTURY II(D)</b>	59	68	64	65	69	58	64	64
VA01W-145	60	70	65	64	68	56	62	63
COKER B960457(D)	56	60 -	58	62	80 +	56	66	63
VA00W-462	62	65	64	63	68	54	61	62
VA01W-99	61	67	64	64	67	54	62	62
VA01W-112	48 -	72	60	63	69	57	63	62
VA01W-148	60	75	68	62	66	51	59	62
<b>PIONEER 2580(D)</b>	55	74	65	64	74	46 -	61	62
<b>JACKSON(B)</b>	62	66	64	61	67	50	59	61
<b>ROANE(B)</b>	59	60 -	60	62	73	52	62	61
VA99W-419	62	63	62	61	69	50	60	61
VA00W-464	54	74	64	60	67	52	60	61

**Table 5. Yield performance (bushels/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2003 harvest, continued.\***

Line	Coastal Plain Region			Piedmont and Blue Ridge Region				State-wide Average
	Painter	Warsaw	Average	Blacks-burg	Orange	Shenandoah Valley	Average	
VA00W-526	59	68	63	65	63	53	60	61
MSU line D8006	56	61	- 59	61	64	62	+ 62	61
NC98-24050(R)	61	63	62	54	- 70	58	60	61
VA99W-452	61	68	65	58	67	48	57	60 -
<b>SS 535(R)</b>	63	68	66	57	61	- 53	57	60 -
<b>USG 3209(RT)</b>	56	66	61	59	67	52	59	60 -
<b>COKER 9025(D)</b>	60	75	68	56	- 59	- 52	56	60 -
VAN00W-147	49	- 66	57	59	66	56	60	59 -
<b>PIONEER 2684(D)</b>	60	72	66	62	62	- 44	- 56	59 -
<b>USG 3650(RT)</b>	53	61	- 58	59	62	- 59	60	59 -
VA01W-258	53	63	58	59	60	- 55	58	58 -
<b>NEUSE(R)</b>	57	66	61	56	- 56	- 57	56	58 -
NC98-26143(R)	57	76	65	54	- 58	- 53	55	58 -
<b>COKER 9184(D)</b>	66	68	67	57	58	- 47	54	- 58 -
VA01W-317	51	- 65	59	61	53	- 55	56	57 -
<b>COKER 9295(D)</b>	57	69	64	56	- 61	- 47	55	57 -
<b>BENTON</b>	51	- 62	- 57	56	- 68	45	- 56	56 -
<b>USG 3350(RT)</b>	56	57	- 57	57	68	43	- 56	56 -
<b>MASSEY</b>	51	- 54	- 53	- 57	59	- 49	55	54 -
VA00W-566	46	- 61	- 54	- 56	- 63	45	- 54	- 54 -
VA01W-283	60	68	64	57	46	- 45	- 49	- 54 -
V9301	54	57	- 56	59	59	- 44	- 54	- 54 -
<b>USG 3430(RT)</b>	54	50	- 52	- 51	- 61	- 41	- 51	- 51 -
VA00W-562	47	- 61	- 54	- 48	- 55	- 43	- 49	- 50 -
<b>SOISSONS</b>	43	- 44	- 43	- 46	- 46	- 33	- 41	- 42 -
Average	59	70	64	62	70	54	62	63
LSD (0.05)	8	8	9	6	8	8	8	3
C.V.	8	7	13	7	8	11	16	8

\* Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

**Table 6. Two-year average yield performance (bu/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Tests, 2002 and 2003 harvests.\***

LINE	Coastal Plain Region			Piedmont and Blue Ridge Region			State-wide Average
	Painter	Warsaw	Average	Blacks-burg	Orange	Average	
<b>SS 520(R)</b>	79	96 +	88	72	93 +	83 +	85 +
VA97W-24	75	97 +	86	72	94 +	83 +	84 +
<b>TRIBUTE</b>	81	93 +	87	72	91 +	81 +	84 +
VA97W-375RS	77	95 +	86	73	86 +	80	82 +
VA97W-375WS	80	98 +	89	69	83	76	82 +
<b>SISSON</b>	76	88	82	74 +	88 +	81 +	81 +
<b>McCORMICK</b>	72	93 +	83	71	89 +	80	81 +
<b>SS 560(R)</b>	75	91	83	74 +	85 +	80	81 +
<b>SS 550(B)</b>	76	92 +	84	70	87 +	78	81 +
VA99W-176	77	95 +	86	67	87 +	77	81 +
VA00W-526	78	90	84	72	83	77	80 +
MD11-52(R)	78	94 +	86	68	82	75	80 +
<b>PIONEER 26R24</b>	71	89	80	70	86 +	78	79
VA98W-706	74	90	82	69	84	76	79
VAN98W-342	69	94 +	83	71	81	76	79
VA98W-631	77	92 +	85	70	81	75	79
VA98W-335	76	90	83	66	81	73	78
<b>PIONEER 2580</b>	73	90	81	68	76	72	76
VA00W-38	62	82 -	73	69	84	76	75
VA00W-464	69	89	79	60	82	71	74
<b>USG 3209(RT)</b>	71	85	78	66	77	71	74
<b>CENTURY II(D)</b>	64	83	74	65	80	73	73
VAN00W-147	67	84	75	63	79	71	73
VA99W-419	72	80 -	76	66	76	71	73
<b>USG 3650(RT)</b>	72	80 -	76	65	76	70	73
<b>FEATHERSTONE 520</b>	72	83	77	65	75 -	70	73
<b>PIONEER 2684</b>	75	84	79	63	72 -	67	73
<b>JACKSON(B)</b>	68	81 -	74	68	73 -	70	72
<b>SS 535(R)</b>	74	84	79	62	72 -	67	72
<b>ROANE(B)</b>	60	76 -	68 -	67	77	72	70 -
<b>COKER 9184(D)</b>	70	81 -	76	67	67 -	67	70 -
<b>COKER 9295(D)</b>	75	82 -	78	59	69 -	64 -	70 -
<b>NEUSE(R)</b>	67	78 -	73	63	72 -	67	69 -
<b>COKER 9025(D)</b>	64	80 -	72	61	69 -	65 -	68 -
<b>MASSEY</b>	62	67 -	64 -	61	68 -	64 -	64 -
VA00W-562	59	76 -	67 -	54 -	66 -	60 -	63 -
Average	70	87	79	66	80	73	75
LSD (0.05)	16	5	11	8	5	8	5
C.V.	20	5	18	13	7	15	12

\* Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

**Table 7. Three-year average yield performance (bu/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Tests, 2001, 2002 and 2003 harvests.\***

LINE	Coastal Plain Region				Piedmont and Blue Ridge Region				State-wide Average				
	Painter	Warsaw	Average		Blacks-burg	Orange	Average						
<b>TRIBUTE</b>	88	93	+	91	+	78	90	+	83	+	87	+	
<b>SS 520(R)</b>	84	95	+	90	+	77	90	+	83	+	86	+	
VA97W-24	81	92	+	87		78	91	+	84	+	85	+	
<b>SS550</b>	85	92	+	89		74	86	+	79		84	+	
VA97W-375RS	84	95	+	90	+	74	85	+	79		84	+	
VA97W-375WS	86	97	+	92	+	73	82		77		84	+	
<b>SISSON</b>	82	90	+	86		75	87	+	81		83	+	
<b>McCORMICK</b>	78	94	+	86		74	87	+	80		83	+	
VA99W-176	84	94	+	89		72	85	+	78		83	+	
<b>SS 560(R)</b>	77	92	+	85		79	+	82		80	82	+	
<b>PIONEER 26R24</b>	81	89		85		73	86	+	79		82	+	
VA98W-706	81	91	+	86		75	81		78		82	+	
<b>USG 3209(RT)</b>	79	86		82		71	78		74		78		
<b>CENTURY II(D)</b>	71	84		77		74	80		77		77		
<b>PIONEER 2580</b>	77	85		81		70	76		73		77		
<b>PIONEER 2684</b>	80	84		82		68	72	-	70		76		
<b>FEATHERSTONE 520</b>	76	79	-	78		69	75		72		75		
<b>JACKSON(B)</b>	73	78	-	75		74	73	-	74		74	-	
<b>SS 535(R)</b>	79	81	-	80		68	71	-	69		74	-	
<b>ROANE(B)</b>	66	76	-	71	-	73	75		74		73	-	
<b>COKER 9184(D)</b>	75	81	-	78		69	69	-	69		73	-	
<b>NEUSE(R)</b>	71	79	-	75		66	71	-	68	-	71	-	
<b>COKER 9025(D)</b>	69	74	-	72	-	63	-	67	-	65	-	68	-
<b>MASSEY</b>	64	-	67	-	66	-	59	-	67	-	64	-	
Average	77	86		81		72	79		75		78		
LSD (0.05)	13	4		9		7	5		7		4		
C.V.	18	6		16		11	7		14		12		

\* Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

**Table 8. Performance summary of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2003 harvest.\***

Line	Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Mar31+)		Height (In)		Lodging (0.2-10)		Powdery Mildew	Leaf Rust	Glume Blotch		
	(5)	(5)	(3)	(3)	(3)	(3)	(4)	(2)	(2)						
<b>SS 520(R)</b>	77	+	56.2	+	36	-	38	+	1.2	1	3	+	1	-	
VA97W-375WS	72	+	55.4	+	37	-	34	-	1.5	0	-	0	-	2	-
MD11-52(R)	72	+	56.0	+	36	-	33	-	0.6	0	-	1	-	2	-
MV5-46	71	+	57.4	+	37	-	35	-	1.3	0	-	6	+	1	-
<b>TRIBUTE</b>	71	+	57.6	+	37	-	36	-	1.6	0	-	1	-	1	-
VA97W-24	70	+	54.6	-	40	+	40	+	2.6	3	+	5	+	2	-
VA99W-176	70	+	55.2	+	36	-	38	+	1.9	0	-	2	-	2	-
VAN98W-342	70	+	55.8	+	37	-	33	-	0.5	0	-	2	-	2	-
VA98W-631	70	+	52.8	-	38	-	35	-	0.2	1	-	1	-	2	-
MD71-5	70	+	55.8	+	37	-	33	-	0.3	0	-	1	-	2	-
<b>SS 550(B)</b>	69	+	54.6	-	38	-	36	-	2.4	0	-	6	+	1	-
<b>SISSON</b>	68	+	55.5	+	36	-	35	-	2.1	1	-	7	+	2	-
<b>McCORMICK</b>	68	+	57.2	+	37	-	34	-	0.2	0	-	0	-	2	-
VA97W-375RS	68	+	55.6	+	37	-	34	-	1.7	0	-	0	-	2	-
VA98W-706	68	+	55.8	+	37	-	34	-	0.6	1	-	0	-	1	-
VA00W-38	68	+	54.2	-	38	-	36	-	0.7	0	-	2	-	3	-
VA01W-205	67	+	55.8	+	38	-	33	-	1.1	1	-	0	-	3	-
VAN98W-170WS	66	+	56.5	+	36	-	38	+	1.7	1	-	1	-	1	-
VAN99W-20	66	+	54.1	-	38	-	37	+	3.1	1	-	2	-	1	-
VA99W-28	66	+	53.4	-	38	-	37	+	2.0	2	+	2	-	1	-
VA01W-353	66	+	53.5	-	37	-	33	-	0.3	0	-	2	-	2	-
<b>SS 560(R)</b>	66	+	54.1	-	39	-	35	-	0.3	2	+	6	+	2	-
V9212(D)	66	+	55.1	-	37	-	41	+	1.5	4	+	4	+	3	-
VA01W-18	65	-	55.0	-	39	-	35	-	0.9	0	-	1	-	2	-
GA931470E62(D)	65	-	56.4	+	37	-	34	-	3.4	0	-	0	-	2	-
VA98W-335	64	-	54.9	-	39	-	32	-	0.7	1	-	0	-	2	-
VA00W-286	64	-	54.3	-	38	-	35	-	1.4	0	-	2	-	2	-
<b>CRAWFORD</b>	64	-	55.7	+	37	-	37	+	1.6	1	-	0	-	3	-
<b>FEATHERSTONE 520(RT)</b>	64	-	55.4	+	38	-	37	+	3.4	2	+	4	+	1	-
GA931241E16(RT)	64	-	55.4	+	39	-	39	+	3.5	1	-	0	-	2	-
GA931233E17(D)	64	-	55.5	+	38	-	39	+	2.8	1	-	1	-	2	-
<b>PIONEER 26R24(D)</b>	64	-	54.2	-	37	-	38	+	1.6	1	-	3	+	2	-
<b>PIONEER 26R58(D)</b>	64	-	53.9	-	37	-	36	-	0.2	2	+	4	+	2	-
<b>CENTURY II(D)</b>	64	-	55.1	-	38	-	37	+	2.1	3	+	5	+	4	+
VA01W-145	63	-	54.2	-	38	-	34	-	1.0	0	-	1	-	2	-
COKER B960457(D)	63	-	53.3	-	39	-	40	+	2.1	3	+	6	+	1	-
VA00W-462	62	-	54.4	-	37	-	38	+	1.8	1	-	2	-	2	-
VA01W-99	62	-	55.1	-	37	-	36	-	0.8	1	-	3	+	3	-
VA01W-112	62	-	52.8	-	37	-	35	-	1.6	0	-	5	+	2	-
VA01W-148	62	-	54.9	-	39	-	31	-	0.2	1	-	0	-	2	-
<b>PIONEER 2580(D)</b>	62	-	54.3	-	37	-	37	+	0.6	1	-	3	+	2	-
<b>JACKSON(B)</b>	61	-	54.5	-	39	-	38	+	4.0	2	+	5	+	3	-
<b>ROANE(B)</b>	61	-	56.6	+	39	-	35	-	1.8	4	+	3	+	2	-
VA99W-419	61	-	54.0	-	38	-	37	+	0.7	1	-	3	+	3	-



**Table 8. Performance summary of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2003 harvest, continued.\***

Line	Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Mar31+)	Height (In)	Lodg- ing (0.2-10)	Powdery	Leaf	Glume
						Mildew	Rust	Blotch
						(0-9)		
						(4)	(2)	(2)
VA00W-464	61	54.6	36 -	36	0.6 -	1	1 -	2 -
VA00W-526	61	54.6	39	33 -	1.6	0 -	1 -	2 -
MSU line D8006	61	54.1	38	40 +	1.2	1	6 +	2 -
NC98-24050(R)	61	51.9 -	39	36	0.8	0 -	0 -	3
VA99W-452	60 -	53.7	39	35 -	1.0	0 -	3 +	3
<b>SS 535(R)</b>	60 -	54.8	39	36	3.1 +	1	2	2 -
<b>USG 3209(RT)</b>	60 -	53.1 -	38	35 -	2.0	1	6 +	3
<b>COKER 9025(D)</b>	60 -	53.2 -	40 +	37 +	2.9 +	3 +	1 -	1 -
VAN00W-147	59 -	54.1	38	37 +	1.7	1	2	2 -
<b>PIONEER 2684(D)</b>	59 -	56.7 +	37	37 +	2.1	2 +	2	3
<b>USG 3650(RT)</b>	59 -	53.8	36 -	38 +	0.5 -	2 +	1 -	3
VA01W-258	58 -	51.9 -	39	35 -	0.3 -	1	0 -	3
<b>NEUSE(R)</b>	58 -	57.3 +	40 +	35 -	2.2	0 -	0 -	2 -
NC98-26143(R)	58 -	51.4 -	40 +	39 +	2.7 +	0 -	1 -	2 -
<b>COKER 9184(D)</b>	58 -	55.8 +	40 +	35 -	0.5 -	2 +	1 -	2 -
VA01W-317	57 -	54.5	38	34 -	1.1	0 -	0 -	2 -
<b>COKER 9295(D)</b>	57 -	53.0 -	36 -	37 +	1.1	2 +	0 -	3
<b>BENTON</b>	56 -	53.0 -	39	37 +	0.6 -	1	4 +	2 -
<b>USG 3350(RT)</b>	56 -	52.8 -	37	41 +	1.3	5 +	0 -	3
<b>MASSEY</b>	54 -	54.8	39	42 +	3.9 +	2 +	8 +	2 -
VA00W-566	54 -	57.1 +	35 -	33 -	0.2 -	1	2	2 -
VA01W-283	54 -	54.4	41 +	35 -	3.3 +	0 -	0 -	1 -
V9301	54 -	53.0 -	37	33 -	1.0	4 +	0 -	4 +
<b>USG 3430(RT)</b>	51 -	52.1 -	36 -	41 +	1.1	6 +	0 -	4 +
VA00W-562	50 -	54.7	38	36	1.2	1	1 -	2 -
<b>SOISSONS</b>	42 -	49.6 -	40 +	32 -	0.2 -	0 -	6 +	4 +
Average	63	54.4	38	36	1.5	1	2	3
LSD (0.05)	3	0.8	2	1	0.9	1	1	1
C.V.	8	2.2	6	3				

\* Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

The number in parentheses below column headings indicates the number of locations on which data are based. Belgian Lodging Scale = Area X Intensity X 0.2. Area = 1-10, where 1 is wheat unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is wheat standing upright and 5 is wheat totally flat.

The 0-9 ratings indicate degree to which plant is affected, where 0=none and 9=total plant affected.

**EVALUATION OF FUNGICIDE/VARIETY INTERACTIONS**

Genetic yield potential is certainly one of the keys to variety success. In most cases the top yielding varieties/lines with fungicide and Gaucho® were also the top yielding lines without Gaucho® seed treatment and fungicide in the spring.

The treated tests are conducted at Warsaw and Painter to assure that each variety is given an opportunity to express its yield potential even if it is susceptible to foliar diseases that can be controlled by Baytan® and Tilt® and insect pressures that can be controlled by Gaucho®. Variety comparisons should only be made within treated or non-treated plots since the plots were located in different areas of the field. It is however interesting to compare the response of McCormick to added fungicide and Gaucho® (-3 bushels per acre) to a relatively disease susceptible variety like Jackson (+12 bushels per acre.)

**Table 9. Summary of performance of entries using seed treatment (Baytan and Gaucho) and foliar fungicide (Tilt) at Painter and Warsaw in the Virginia Tech Wheat Test, 2003 harvest.\***

Line	Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed Mar31+	Height (In)	Lodg- ing (0.2-10)	Powdery	Leaf	Glume
						Mildew	Rust	Blotch
	(2)	(2)	(1)	(1)	(1)	(0-9)		
						(1)	(1)	(1)
<b>SS 520</b>	88 +	58.4	33 -	36 +	0.2	1	0 -	1 -
<b>TRIBUTE</b>	88 +	60.3 +	35 -	34	0.3	0 -	0 -	1 -
<b>SISSON</b>	86 +	59.1 +	34 -	32 -	0.2	0 -	3 +	3 +
MV5-46	86 +	60.2 +	35 -	35	0.3	0 -	1	2
VA97W-375RS	85 +	59.0 +	35 -	31 -	0.5	0 -	0 -	2
VA99W-176	85 +	58.3	34 -	33	0.2	0 -	0 -	1 -
VA00W-526	85 +	59.0 +	36	32 -	0.2	0 -	0 -	2
<b>SS 550</b>	85 +	58.4	35 -	32 -	0.2	0 -	2 +	2
VA97W-24	84 +	57.7 -	38 +	37 +	0.2	1	1	2
VA01W-205	84 +	59.5 +	35 -	32 -	0.2	2 +	0 -	1 -
VA01W-283	84 +	59.1 +	39 +	31 -	0.2	0 -	0 -	1 -
VA01W-353	84 +	57.5 -	35 -	32 -	0.2	0 -	1	3 +
MD11-52	84 +	59.7 +	35 -	31 -	0.5	0 -	0 -	3 +
V9212	84 +	58.3	34 -	38 +	0.2	2 +	0 -	3 +
VA97W-375WS	83	59.0 +	35 -	32 -	0.3	0 -	0 -	2
VAN98W-342	83	59.5 +	35 -	29 -	0.2	0 -	0 -	2
VA99W-28	83	57.7 -	35 -	35	0.5	0 -	0 -	1 -
VA01W-99	83	59.3 +	36	36 +	0.2	1	2 +	1 -
VA01W-148	83	58.7	37 +	30 -	0.2	0 -	0 -	3 +
MD71-5	83	59.6 +	35 -	30 -	0.2	0 -	0 -	3 +
<b>FEATHERSTONE 520</b>	83	59.7 +	36	35	1.3 +	2 +	1	2
GA931241E16	83	59.7 +	36	38 +	0.7	3 +	0 -	2
<b>PIONEER 26R24</b>	83	58.9 +	35 -	37 +	0.2	2 +	2 +	1 -
VAN99W-20	82	58.2	36	36 +	0.2	0 -	0 -	1 -
VA98W-335	81	59.4 +	37 +	30 -	0.4	0 -	0 -	3 +
VA00W-286	81	58.0	36	32 -	0.2	0 -	1	1 -
VA01W-112	81	57.9 -	35 -	32 -	0.2	0 -	1	2
GA931233E17	81	59.6 +	35 -	37 +	1.8 +	3 +	0 -	2
<b>SS 560</b>	81	57.9 -	37 +	33	0.2	2 +	2 +	2
<b>CENTURY II</b>	81	59.3 +	36	35	0.7	3 +	2 +	2
COKER B960457	81	56.7 -	38 +	38 +	0.2	2 +	1	1 -
VA98W-706	80	59.4 +	35 -	32 -	0.2	0 -	0 -	3 +
VA01W-145	80	57.7 -	36	33	0.2	0 -	0 -	2
<b>CRAWFORD</b>	80	59.9 +	35 -	35	0.7	0 -	0 -	2

**Table 9. Summary of performance of entries using seed treatment (Baytan and Gaucho) and foliar fungicide (Tilt) at Painter and Warsaw in the Virginia Tech Wheat Test, 2003 harvest, cont'd.\***

Line	Yield (Bu/a)	Test Weight (Lb/bu)	Date		Height (In)	Lodg- ing (0.2-10)	Powdery Mildew		Leaf Rust		Glume Blotch		
			Mar31+				(0-9)		(0-9)		(1)		
	(2)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
GA931470E62	80	59.9	+	35	-	32	-	0.2	2	+	0	-	2
<b>PIONEER 2684</b>	80	57.6	-	36		35		0.3	2	+	2	+	1
<b>SS 535</b>	80	59.1	+	38	+	34		0.3	2	+	0	-	1
<b>USG 3209</b>	80	57.3	-	35	-	33		0.4	0	-	3	+	2
<b>McCORMICK</b>	79	60.1	+	36		31	-	0.2	0	-	0	-	1
VA98W-631	79	56.7	-	38	+	32	-	0.2	3	+	0	-	2
<b>COKER 9025</b>	79	57.8	-	38	+	33		0.4	4	+	0	-	1
VA00W-38	78	56.6	-	35	-	35		0.2	2	+	1		2
VA00W-464	78	58.8		34	-	32	-	0.2	0	-	0	-	2
VA01W-18	78	58.2		36		33		0.2	0	-	0	-	1
<b>COKER 9184</b>	78	59.9	+	38	+	32	-	0.2	3	+	0	-	1
<b>JACKSON</b>	77	58.5		38	+	34		0.2	2	+	2	+	2
VA99W-452	77	57.7	-	37	+	33		0.3	0	-	1		3
VA00W-462	77	57.9	-	35	-	36	+	0.2	1		0	-	2
VA01W-317	77	58.7		35	-	33		0.2	0	-	0	-	3
NC98-24050	77	55.7	-	37	+	33		0.2	0	-	0	-	3
<b>PIONEER 2580</b>	77	57.4	-	35	-	33		0.2	2	+	0	-	2
VA99W-419	76	57.5	-	37	+	34		0.2	1		1		2
MSU line D8006	76	57.2	-	37	+	36	+	0.2	2	+	2	+	2
<b>BENTON</b>	76	57.2	-	36		32	-	0.2	1		1		2
<b>NEUSE</b>	76	59.8	+	37	+	32	-	0.3	0	-	0	-	1
NC98-26143	76	57.0	-	38	+	35		0.2	0	-	0	-	2
<b>COKER 9295</b>	76	56.8	-	38	+	33		0.2	2	+	0	-	2
VAN98W-170WS	75	58.8		34	-	35		0.2	1		0	-	2
V9301	75	57.4	-	33	-	32	-	0.2	3	+	0	-	1
VA00W-562	74	59.1	+	36		32	-	0.2	1		0	-	2
VA01W-258	74	56.7	-	38	+	33		0.2	1		0	-	3
<b>PIONEER 26R58</b>	74	56.6	-	37	+	33		0.2	1		1		3
<b>USG 3650</b>	73	57.7	-	38	+	35		0.2	1		0	-	2
<b>MASSEY</b>	72	58.5		37	+	39	+	0.3	2	+	5	+	2
VAN00W-147	72	57.2	-	37	+	33		0.2	0	-	1		4
<b>USG 3350</b>	72	56.9	-	35	-	38	+	0.2	7	+	0	-	3
VA00W-566	71	60.4	+	32	-	30	-	0.2	0	-	1		2
<b>ROANE</b>	68	59.2	+	38	+	32	-	0.2	6	+	1		3
<b>USG 3430</b>	65	56.9	-	33	-	37	+	0.2	7	+	0	-	3
<b>SOISSONS</b>	61	55.9	-	39	+	30	-	0.2	0	-	3	+	2
Average	79	58.4		36		34		0.3	1		1		2
LSD (0.05)	5	0.5		1		2		0.6	1		1		1
C.V.	6	0.8		2		4							

Seed received Baytan® and Gaucho® seed treatment as recommended; plots were treated with Tilt® at 4 oz/acre at heading. Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

The number in parentheses below column headings indicates the number of locations on which data are based.

Belgian Lodging Scale = Area X Intensity X 0.2. Area = 1-10, where 1 is wheat unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is wheat standing upright and 5 is wheat totally flat.

The 0-9 ratings indicate degree to which plant is affected, where 0=none and 9=total plant affected.

**Table 10. Performance of entries in the Virginia Tech Wheat Test at Warsaw, 2003 harvest, fungicide versus no fungicide.\***

Line	Yield (Bu/a)			Test Weight (Lb/bu)		
	With	Without	Difference	With	Without	Difference
VA01W-148	91	75	16	58.9	58.5	0.4
<b>SS 520(R)</b>	91	81	10	58.0	58.3	-0.3
<b>TRIBUTE</b>	90	78	12	60.8	60.7	0.1
MV5-46	89	76	13	60.2	60.2	0.0
MD11-52(R)	88	80	8	59.5	59.2	0.3
GA931241E16(RT)	88	76	12	59.7	59.6	0.1
GA931233E17(D)	88	69	19	59.6	59.6	0.0
V9212(D)	87	71	16	58.5	57.1	1.4
<b>SISSON</b>	86	65	21	58.6	55.9	2.7
VA00W-526	86	68	18	58.8	58.2	0.6
VA99W-28	86	78	8	57.5	57.4	0.1
VA01W-99	86	67	19	59.1	58.1	1.0
VAN99W-20	85	78	7	58.0	57.7	0.3
<b>PIONEER 26R24(D)</b>	85	73	12	58.5	56.9	1.6
VA97W-24	84	77	7	57.4	57.2	0.2
VA00W-38	84	74	10	56.8	55.4	1.4
VA01W-145	84	70	14	57.4	56.7	0.7
<b>FEATHERSTONE 520(RT)</b>	84	69	15	59.2	58.7	0.5
<b>SS 550(B)</b>	84	72	12	58.0	56.6	1.4
<b>SS 535(R)</b>	84	68	16	59.0	58.9	0.1
<b>SS 560(R)</b>	84	71	13	57.6	55.8	1.8
VA97W-375WS	83	83	0	58.9	58.6	0.3
VA98W-335	83	73	10	58.7	58.4	0.3
VA00W-464	83	74	9	58.5	57.4	1.1
VA01W-205	83	75	8	58.7	58.4	0.3
VA97W-375RS	82	75	7	59.0	58.9	0.1
VA99W-176	82	81	1	57.8	57.9	-0.1
VAN98W-342	82	84	-2	58.9	58.4	0.5
<b>PIONEER 2684(D)</b>	82	72	10	56.7	59.9	-3.2
<b>CENTURY II(D)</b>	82	68	14	59.2	57.9	1.3
VA98W-706	81	78	3	59.0	59.0	0.0
VA00W-286	81	77	4	57.2	57.1	0.1
VA01W-353	81	68	13	56.2	55.7	0.5
MD71-5	81	80	1	59.1	58.8	0.3
<b>USG 3209(RT)</b>	81	66	15	57.1	54.9	2.2
VA99W-452	80	68	12	57.6	56.2	1.4
VA01W-18	80	69	11	58.0	56.9	1.1
VA01W-112	80	72	8	57.2	55.1	2.1
VA01W-283	80	68	12	59.0	58.5	0.5
<b>COKER 9025(D)</b>	80	75	5	57.8	56.7	1.1
<b>CRAWFORD</b>	79	72	7	59.8	59.5	0.3
GA931470E62(D)	79	66	13	59.6	59.0	0.6
<b>JACKSON(B)</b>	78	66	12	57.9	56.9	1.0
<b>McCORMICK</b>	78	81	-3	60.0	60.2	-0.2
VA98W-631	78	80	-2	56.2	56.4	-0.2
VA00W-462	78	65	13	57.8	56.8	1.0

**Table 10. Performance of entries in the Virginia Tech Wheat Test at Warsaw, 2003 harvest, fungicide versus no fungicide, continued.\***

Line	Yield (Bu/a)			Test Weight (Lb/bu)		
	With	Without	Difference	With	Without	Difference
VA01W-317	78	65	13	58.2	58.2	+ 0.0
MSU line D8006	78	61	- 17	56.7	54.2	- 2.5
<b>NEUSE(R)</b>	78	66	12	59.4	59.1	+ 0.3
NC98-26143(R)	78	76	2	57.0	56.6	0.4
<b>PIONEER 2580(D)</b>	78	74	4	56.5	56.2	- 0.3
<b>COKER 9184(D)</b>	78	68	10	59.8	59.8	+ 0.0
<b>COKER 9295(D)</b>	78	69	9	56.7	56.1	- 0.6
COKER B960457(D)	77	60	- 17	55.8	53.6	- 2.2
VA99W-419	76	63	13	56.8	55.1	- 1.7
VA00W-562	76	61	- 15	58.2	57.4	0.8
NC98-24050(R)	76	63	13	54.7	54.5	- 0.2
<b>PIONEER 26R58(D)</b>	76	68	8	55.9	55.0	- 0.9
<b>MASSEY</b>	74	54	- 20	58.4	56.3	- 2.1
VAN98W-170WS	74	71	3	58.0	58.6	+ -0.6
VA01W-258	74	63	11	55.6	54.1	- 1.5
<b>BENTON</b>	72	62	- 10	56.1	54.2	- 1.9
<b>USG 3650(RT)</b>	71	61	- 10	56.8	55.6	- 1.2
<b>ROANE(B)</b>	69	60	- 9	58.6	57.8	0.8
VA00W-566	69	61	- 8	59.8	59.4	+ 0.4
<b>USG 3350(RT)</b>	69	57	- 12	55.4	54.2	- 1.2
V9301	69	57	- 12	56.3	55.0	- 1.3
VAN00W-147	68	66	2	56.6	56.1	- 0.5
<b>SOISSONS</b>	64	44	- 20	54.9	51.6	- 3.3
<b>USG 3430(RT)</b>	62	50	- 12	55.3	53.4	- 1.9
Average	80	70		57.9	57.2	
LSD (0.05)	7	8		0.7	0.9	
C.V.	6	7		0.7	0.9	

\* Varieties are ordered by descending treated yields.

A plus or minus sign indicates a performance significantly above or below the test average.

Fungicide-treated plots received Baytan® and Gaucho® seed treatment, plus Tilt® at heading.

Non-fungicide-treated plots received seed treatment recommended and applied by seed companies, and the specific seed treatment applied to each line is indicated in parentheses following the variety name. All Virginia experimental lines and public releases were treated with (RT) except where indicated otherwise.

**Table 11. Two- and three-year yield performance (bu/acre) of entries in the Virginia Tech Wheat Test at Warsaw, 2001, 2002, and 2003 harvests, fungicide versus no fungicide.\***

Line	2-year		3-year	
	With	Without	With	Without
<b>SS 520(R)</b>	106 +	96 +	102 +	95 +
<b>TRIBUTE</b>	104 +	93 +	100 +	93 +
<b>SS 560(R)</b>	103 +	91	102 +	92 +
VA97W-24	103 +	97 +	97	92 +
VA98W-335	102 +	90	---	---
<b>SS 550(B)</b>	102 +	92 +	101 +	92 +
<b>SISSON</b>	102 +	88	101 +	90 +
MD11-52(R)	101 +	94 +	---	---
VA00W-526	101 +	90	---	---
VA97W-375WS	101 +	98 +	100 +	97 +
<b>PIONEER 26R24(D)</b>	101 +	89	96	89
VAN98W-342	98	94 +	---	---
VA97W-375RS	98	95 +	98	95 +
<b>SS 535(R)</b>	98	84	92	81 -
VA99W-176	97	95 +	98	94 +
<b>USG 3209(RT)</b>	97	85	96	86
<b>PIONEER 2684</b>	97	84	93	84
VA98W-631	96	92 +	---	---
VA00W-464	96	89	---	---
VA98W-706	95	90	98	91 +
<b>PIONEER 2580</b>	95	90	92	85
<b>CENTURY II(D)</b>	95	83	92	84
<b>COKER 9295(D)</b>	94	82 -	---	---
<b>McCORMICK</b>	94	93 +	97	94 +
VA99W-419	92	80 -	---	---
<b>COKER 9184(D)</b>	91	81 -	93	81 -
<b>FEATHERSTONE 520</b>	91	83	87 -	79 -
VA00W-38	90	82 -	---	---
<b>USG 3650(RT)</b>	88 -	80 -	---	---
<b>JACKSON(B)</b>	88 -	81 -	86 -	78 -
<b>NEUSE(R)</b>	88 -	78 -	85 -	79 -
VAN00W-147	87 -	84	---	---
<b>COKER 9025(D)</b>	86 -	80 -	84 -	74 -
VA00W-562	83 -	76 -	---	---
<b>ROANE(B)</b>	82 -	76 -	84 -	76 -
<b>MASSEY</b>	80 -	67 -	78 -	67 -
Average	95	87	94	86
LSD (0.05)	6	5	5	4
C.V.	6	5	6	6

\* Varieties are ordered by descending treated 2-year yields.

A plus or minus sign indicates a performance significantly above or below the test average. Fungicide-treated plots received Baytan® and Gaucho® seed treatment, plus Tilt® at heading. Non-fungicide-treated plots received seed treatment recommended and applied by seed companies, and the specific seed treatment applied to each line is indicated in parentheses following the variety name. All Virginia experimental lines and public releases were treated with (RT) except where indicated otherwise.

**WHEAT PLANTED NO-TILL INTO CORN STUBBLE**

Wheat was planted no-till into corn stubble at the Eastern Virginia AREC near Warsaw, Virginia. Cooperator Charles Sanford harvested the corn and shredded the stalks. Preplant fertilizer of 30-100-60 was applied October 2, 2002. Lime was applied at 1.5 tons per acre and the field was sprayed with one quart Roundup® on September 30, 2002. Gramaxone Extra® was applied at 1.5 pints on October 9, 2002. The wheat varieties were planted on October 23, 2002 with a Hege plot drill at 30 seeds/row. Additional fertilizer and herbicide were applied as follows. Forty lb 24-0-0-3 were applied January 13, 2003. Forty lb 24-0-0-3 were applied March 11, 2003. Harmony Extra® at 0.6 oz and 60 lb 24-0-0-3 were applied March 28, 2003. Finesse7 was applied at 0.5 oz April 2, 2003 for the control of speedwell. Harvest occurred June 27, 2003.

An excellent stand was obtained. Even with the relatively cold winter the notill wheat plots looked good and yielded quite well (over 90 bushels per acre.) The first thing to notice is that the top-yielding varieties have averaged over 90 bushels per acre and generally been at the top all three years. Top varieties of wheat when planted notill into corn residue were Pioneer Brand 26R24, McCormick, Tribute, SS550, Sisson, and SS520. All of these varieties also performed well under conventional tillage. During the past five years, scab was of economic importance only in 1998 in these tests. Excellent yields and excellent test weights show that scab was not significant in 2003 even with excessive rainfall during heading and grain fill. Long term, it will still be beneficial in notill and conventional till when Fusarium resistance is increased in more varieties. Tribute, McCormick, and Roane have a degree of resistance to scab spread in the head.

**Table 12. Summary of performance of entries in the Virginia Tech No-Till Wheat Test at Warsaw, 2001, 2002, and 2003 harvests.\***

Line	Average Yield (Bu/acre)			Test Weight (Lb/bu)	Lodging (0.2-10)	Date Headed (Mar31+)	Ht. (In)	Pow-	Leaf
	3- year	2- year	1- year					dery Mildew	Rust
								(0-9)	
MD71-5	---	---	92 +	59.5 +	0.2	37	29 -	0 -	0 -
VAN98W-342	---	89 +	91 +	59.5 +	0.2	37	28 -	0 -	1
<b>PIONEER 26R24(D)</b>	90 +	90 +	90 +	58.3	1.0	37	35 +	1	1
VA99W-176	94 +	90 +	89 +	57.2	0.9	37	32	0 -	1
<b>McCORMICK</b>	92 +	94 +	88 +	61.3 +	0.2	37	29 -	0 -	0 -
<b>TRIBUTE</b>	95 +	95 +	86 +	61.4 +	0.2	37	30	0 -	0 -
MV5-46	---	---	86 +	60.2 +	0.2	38	31	0 -	2 +
VA98W-335	---	89 +	85 +	59.3 +	0.2	38	27 -	0 -	0 -
VA98W-706	88	88 +	84 +	58.4 +	0.3	37	29 -	0 -	0 -
VA00W-464	---	80	83	58.0	0.4	37	29 -	1	0 -
VA99W-28	---	---	83	57.2	3.6 +	38	32	2 +	0 -
<b>SS 550(B)</b>	92 +	90 +	83	57.5	2.7 +	38	28 -	1	1
<b>SISSON</b>	92 +	87	83	57.9	1.2	36	30	1	4 +
GA931241E16(RT)	---	---	83	59.3 +	4.2 +	39	35 +	2 +	0 -
VA01W-112	---	---	82	57.5	0.4	38	30	0 -	1
<b>CRAWFORD</b>	---	---	82	58.6 +	2.6 +	36	32	0 -	0 -
<b>PIONEER 26R58(D)</b>	---	---	82	55.5 -	0.2	38	31	1	1
V9212(D)	---	---	82	57.9	0.7	37	36 +	2 +	0 -
VA01W-145	---	---	81	57.8	0.4	39	29 -	0 -	0 -
MD11-52(R)	---	81	80	58.3	0.2	37	26 -	0 -	0 -
<b>USG 3209(RT)</b>	86	80	79	57.6	0.2	39	30	0 -	2 +
<b>CENTURY II(D)</b>	83	80	79	57.8	1.5	38	33 +	1	2 +
<b>SS 535(R)</b>	87	83	79	58.6 +	1.5	39	31	2 +	1
VA00W-462	---	---	78	58.2	1.1	38	33 +	1	1
VA01W-258	---	---	78	56.2 -	0.2	40	30	2 +	0 -
VA01W-353	---	---	78	56.8	0.3	38	28 -	0 -	1
VA97W-375RS	87	84	78	57.6	0.6	37	27 -	0 -	1
<b>SS 520(R)</b>	90 +	85	78	57.7	2.3	35 -	35 +	1	1
VA99W-452	---	---	77	57.3	0.3	39	31	1	1
VA01W-18	---	---	77	57.6	0.2	39	30	0 -	0 -
<b>NEUSE(R)</b>	79 -	77	77	60.5 +	0.8	39	30	0 -	0 -
VA98W-631	---	81	76	54.9 -	0.2	39	28 -	1	0 -



**Table 12. Summary of performance of entries in the Virginia Tech No-Till Wheat Test at Warsaw, 2001, 2002, and 2003 harvests, continued.\***

Line	Average Yield (Bu/acre)			Test Weight (Lb/bu)	Lodging (0.2-10)	Date Headed (Mar31+)	Ht. (In)	Pow- dery Mildew (0-9)	Leaf Rust
	3- year	2- year	1- year						
VA01W-148	---	---	76	58.2	0.2	40	26	- 1	0 -
NC98-26143(R)	---	---	76	56.2	- 1.6	40	35	+ 0	- 0 -
<b>PIONEER 2684(D)</b>	81	76	- 75	59.7	+ 0.2	38	32	1	0 -
<b>JACKSON(B)</b>	84	84	75	57.5	2.9 +	39	31	2 +	3 +
VAN98W-170WS	---	---	75	58.2	2.1	36	32	2 +	0 -
VA00W-286	---	---	75	56.0	- 0.4	38	29	- 1	0 -
VA01W-283	---	---	75	59.1	+ 1.9	41	+ 30	0	- 0 -
VA97W-24	95	+ 93	+ 75	57.3	0.9	39	33	+ 1	1
MSU line D8006	---	---	75	55.3	- 0.2	39	34	+ 1	1
GA931233E17(D)	---	---	75	58.9	+ 3.4 +	38	34	+ 1	0 -
GA931470E62(D)	---	---	75	59.2	+ 3.9 +	37	28	- 1	0 -
VA00W-526	---	92	+ 74	58.8	+ 0.2	39	28	- 0	- 0 -
VA01W-317	---	---	74	58.0	0.2	38	31	0	- 1
<b>COKER 9184(D)</b>	78	- 75	- 74	59.8	+ 0.2	40	29	- 2	+ 1
VA99W-419	---	82	73	56.0	- 0.3	38	31	2	+ 1
VA00W-38	---	77	73	55.8	- 0.7	39	30	1	0 -
VA01W-99	---	---	73	58.8	+ 0.2	39	31	0	- 1
<b>SS 560(R)</b>	87	86	73	56.0	- 0.2	39	29	- 1	1
COKER B960457(D)	---	---	73	55.7	- 0.2	39	37	+ 3	+ 1
VAN99W-20	---	---	72	57.0	0.7	39	32	1	1
<b>COKER 9025(D)</b>	78	- 71	- 71	55.9	- 3.6 +	39	31	2	+ 0 -
VA01W-205	---	---	71	57.7	0.2	38	28	- 2	+ 0 -
VA97W-375WS	84	81	71	57.2	0.2	37	26	- 0	- 0 -
NC98-24050(R)	---	---	71	53.2	- 0.3	38	30	0	- 0 -
<b>FEATHERSTONE 520(RT)</b>	79	- 71	- 69	58.6	+ 2.2	39	31	1	1
VAN00W-147	---	81	69	56.1	- 0.3	39	30	0	- 0 -
<b>BENTON</b>	---	---	69	55.9	- 0.3	39	30	1	1
<b>PIONEER 2580(D)</b>	81	77	68	- 55.6	- 1.6	38	32	1	1
<b>COKER 9295(D)</b>	---	72	- 68	- 55.6	- 0.3	40	33	+ 3	+ 0 -
<b>MASSEY</b>	70	- 62	- 66	- 57.7	1.9	39	36	+ 2	+ 4 +
<b>ROANE(B)</b>	78	- 79	66	- 59.1	+ 0.2	39	29	- 5	+ 1
<b>USG 3650(RT)</b>	---	81	65	- 56.1	- 0.2	30	- 31	0	- 1
VA00W-562	---	72	- 64	- 58.1	0.2	39	31	1	0 -
VA00W-566	---	---	60	- 59.0	+ 0.2	35	- 26	- 1	1
<b>USG 3350(RT)</b>	---	---	59	- 53.1	- 0.3	37	36	+ 6	+ 0 -
<b>SOISSONS</b>	---	---	59	- 54.9	- 0.2	40	28	- 0	- 2 +
V9301	---	---	56	- 53.5	- 0.2	37	28	- 5	+ 0 -
<b>USG 3430(RT)</b>	---	---	48	- 51.1	- 1.1	36	35	+ 7	+ 0 -
Average	85	82	76	57.4	0.9	38	31	1	1
LSD (0.05)	5	6	8	1.0	1.5	3	2	1	1
C.V.	7	7	6	1.0		7	4		

\* Varieties are ordered by descending one-year yield averages. The years 2001 and 2002 had 4 replications; the year 2003 had 3 replications. Data other than yield is given for 2003 harvest only. A plus or minus sign indicates a performance significantly above or below the test average. Belgian Lodging Scale = Area X Intensity X 0.2. Area = 1-10, where 1 is wheat unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is wheat standing upright and 5 is wheat totally flat. The 0-9 ratings indicate degree to which plant is affected, where 0=none and 9=total plant affected.

## TRITICALE VARIETIES

Table 13. Summary of performance of entries in the Virginia Tech Triticale Test, 2003 harvest\*.

Line	Yield		Test Weight		Lodging		Heading Date		Height		Powdery Mildew		Leaf Rust	
	(Bu/acre)		(Lb/bu)		(0.2-10)		(Mar31+)		(Inches)		(0-9)		(1)	(1)
SISSON	63	+	54.0	+	2.6	+	36	+	35	-	3	+	7	
TRICAL 2205	60		48.3		0.6		35	+	39	-	1		0	
ARCIA	59		47.7		1.1		32	-	46	+	0	-	0	
TRICAL 2115	57		46.6	-	0.2	-	31	-	38	-	0	-	0	
TRICAL 336	54	-	45.4	-	1.3		37	+	47	+	1		0	
Average	59		48.4		1.2		34		41		1		1	
LSD (0.05)	3		0.8		0.7		1		1		1			
C.V.	8		2.7				1		2					

\* Yields were calculated using 60 lb/bu for both triticales and Sisson wheat.

Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

The number in parentheses below column headings indicates the number of locations on which data are based.

Belgian Lodging Scale = Area X Intensity X 0.2. Area = 1-10, where 1 is crop unaffected and 10 is entire plot affected and Intensity = 1-5, where 1 is crop standing upright and 5 is crop totally flat.

The 0-9 ratings indicate degree to which plant is affected, where 0=none and 9=total plant affected.

Table 14. Yield performance (bushels/acre) of entries in the Virginia Tech Triticale Test, 2003 harvest\*.

Line	Painter	Warsaw	Blacksburg	Orange	Valley	Average			
SISSON	65	61	- 61	+	75	+	54	63	+
TRICAL 2205	68	73	+	53	61		50	60	
ARCIA	54	- 67		47	72	+	56	59	
TRICAL 2115	58	74	+	48	57	-	50	57	
TRICAL 336	62	62	-	44	53	-	52	54	-
Average	62	67		51	63		52	59	
LSD (0.05)	7	4		10	6		9	3	
C.V.	6	4		12	6		11	8	

\* Yields were calculated using 60 lb/bu for both triticales and Sisson wheat.

Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

**Table 15. Two-year yield performance (bushels/acre) of entries in the Virginia Tech Triticale Test, 2002 and 2003 harvests\*.**

Line	Painter	Warsaw	Blacksburg	Orange	Average
TRICAL 2205	85 +	95 +	71 +	72	81 +
TRICAL 336	86 +	83 -	65	71	76
TRICAL 2115	75 -	92 +	61	68	74
ARCIA	76	81	57	76	72 -
Average	80	88	63	72	76
LSD (0.05)	5	4	7	5	3
C.V.	6	4	10	6	7

\*Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

**Table 16. Three-year yield performance (bushels/acre) of entries in the Virginia Tech Triticale Test, 2001, 2002, and 2003 harvests\*.**

Line	Painter	Warsaw	Blacksburg	Orange	Average
TRICAL 2205	89	99	78	74	85 +
TRICAL 2115	80	96	69 -	70	79 -
Average	84	98	74	72	82
LSD (0.05)	7	5	5	4	2
C.V.	8	5	7	4	6

\*Varieties are ordered by descending statewide yield averages.

A plus or minus sign indicates a performance significantly above or below the test average.

### MILLING AND BAKING QUALITY

Milling and baking quality of wheat lines grown in the 2001-2002 Virginia State Wheat Test were assessed by the USDA-ARS Soft Wheat Quality Laboratory (SWQL) in Wooster, Ohio (Table 17). Quality evaluations were conducted using 2000 gram seed samples from wheat lines grown at the Painter, VA test site. The data presented here are for a single location and, therefore, are not a definitive measure of a given wheat line's milling and baking quality. Because quality varies from location to location and from year to year, data over years and locations are needed to accurately define quality of a given wheat line.

Milling and baking quality of wheat lines were compared to that of the local check cultivar Sisson. On the basis of four independent quality evaluations conducted by the SWQL, Sisson ranked 217 out of 687 cultivars for milling quality and has better than average milling qualities. Sisson has weak protein gluten strength and pastry baking quality is below average but acceptable. Lines receiving milling and baking scores of "A" have average (numeric score = 100) or better than average (scores > 100) quality compared with Sisson. Because Sisson is rather lenient as a quality standard, wheat lines with scores below those of Sisson, particularly for baking quality may have questionable quality for pastry products. For comparison, AGS 2000 has excellent milling and pastry baking quality and ranks 17<sup>th</sup> out of 687 cultivars evaluated by the SWQL.

Milling quality scores ranged from a high of 110 (AGS 2000) to a low of 73.8 with 9 of 25 lines having better milling quality than Sisson (score of 100). Flour yields ranged from a high of 79.8% (AGS 2000) to a low of 76.0% compared to 77.7% for Sisson. Pastry baking quality scores ranged from a high of 106.7 (SS 560) to a low of 68.0 with 15 lines having similar or better baking quality than Sisson (score of 100). Cookie diameter ranged from a high of 18.54 cm to a low of 17.10 cm compared to 17.8 cm for Sisson.

Flour protein concentration varied from 7.44 to 9.02%. Protein quality, specifically gluten strength, based on Lactic Acid Solvent Retention Capacity varied from a high of 102.3 to a low of 68.3 compared to 77.9 for the weak gluten check variety Sisson. Lines having lower Lactic Acid scores such as Sisson likely would produce a dough having weak gluten strength and be more suitable for pastry products, while lines having higher Lactic Acid scores such as Tribute would produce a dough having stronger gluten strength and be more suitable for cracker or certain bread products.

**Table 17. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluations of the 2002 harvest.**

LINE	MILLABILITY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	STRAIGHT GRADE FLOUR YIELD	SOFTNESS ENDOSPERM SEPARATION INDEX	FLOUR PROTEIN %	ALKALINE WATER RETENTION CAPACITY %	COOKIE DIAMETER CM	LACTIC ACID 0.1 MOISTURE BASIS			
SISSON (STANDARD)	117.0	100.0	A	100.0	A	77.7	9.9	7.90	58.1	17.80	77.9	
AGS2000(TV)	134.7	110.0	A	105.1	A	79.8	6.5	8.15	57.4	18.06	86.0	
VA98W-631	124.8	108.2	A	93.2	C	79.3	7.4	8.52 *	56.3	17.63	97.9	
VA98W-706	124.8	105.1	A	98.1	B	78.0	8.7	8.06	54.9	17.76	95.7	
CENTURY II(D)	120.3	103.6	A	99.9	A	78.0	8.5	7.74	57.3	17.67	78.6	
VA99W-176	119.5	105.0	A	96.4	B	78.2	8.4	8.68 *	57.8	17.83	96.0	
SS 520(R)	118.4	106.7	A	105.9	A	78.1	8.6	7.73	53.3	18.19	85.9	
VA00W-526	117.4	105.7	A	90.9	C	78.9	8.2	8.97 **	56.2	17.65	92.0	
VA97W-375RS	112.1	93.4	C	104.2	A	77.0	*	9.7	8.26	55.0	18.54	78.5
VA98W-591	111.7	101.1	A	100.0	A	77.5	8.9	8.29	59.0	17.83	96.2	
VA97W-375WS	110.6	95.5	B	104.5	A	77.3	9.3	8.42 *	54.9	18.45	76.5	
VAN00W-147	109.8	100.6	A	101.6	A	78.3	9.4	8.71 *	57.5	17.97	88.8	
VA98W-593	109.6	98.8	B	70.9	F	77.7	9.4	8.10	60.1	* 17.30	* 101.0	
VA98W-335	106.3	* 87.9	D	100.9	A	76.4	** 10.6	* 8.80	** 60.1	* 18.33	78.3	
MD11-52(R)	105.9	* 90.8	C	104.7	A	76.9	* 10.0	8.11	56.1	18.40	77.4	

**Table 17. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluations of the 2002 harvest, continued.**

LINE	MILLABILITY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	STRAIGHT GRADE FLOUR YIELD	SOFTNESS ENDOSPERM SEPARATION INDEX	FLOUR PROTEIN %	ALKALINE WATER RETENTION CAPACITY %	COOKIE DIAMETER CM	LACTIC ACID 0.1 MOISTURE BASIS
SISSON (STANDARD)	117.0	100.0 A	100.0 A	77.7	9.9	7.90	58.1	17.80	77.9
VA00W-562	105.3 *	98.4 B	99.0 B	77.6	9.4	9.02 **	56.7	17.82	86.1
PIONEER 26R24(B)	104.7 *	92.2 C	100.7 A	76.7 *	10.1	7.78	57.5	17.70	88.9
SS 560(R)	103.8 *	87.3 D	106.7 A	76.8 *	10.8 *	7.44	58.1	18.10	75.0
SS 550(R)	103.8 *	89.7 D	101.0 A	76.7 *	10.6 *	7.50	60.2 *	18.04	77.5
VA00W-38	102.0 *	85.2 D	97.4 B	76.0 **	10.4	8.05	58.2	17.70	102.3
VAN98W-342	99.0 *	90.7 C	100.4 A	76.8 *	10.3	8.74 *	60.3 *	18.22	68.3
VA99W-419	97.0 **	84.5 E	101.3 A	76.0 **	11.0 **	8.38 *	56.9	17.75	92.3
VA99W-131	96.1 **	84.7 E	68.0 F	76.6 **	10.8 *	7.77	60.4 *	17.30 *	81.5
USG 3209(RT)	93.8 **	85.3 D	98.1 B	76.6 **	10.9 *	7.83	60.8 *	17.92	87.5
VA00W-464	91.0 **	73.8 F	99.4 B	76.1 **	12.2 **	7.54	61.1 *	18.00	89.5

## WHEAT SCAB RESEARCH

Full time effort by several members of Dr. Carl Griffey's staff including Jianli Chen, Julie Wilson, Tom Pridgen, and Daryoosh Nabati is making progress toward varieties with reduced scab incidence and reduced severity. Data in Table 11 and previous years' results show released varieties such as McCormick, Tribute, Neuse, and Roane to have reduced scab infection compared to varieties such as SS535, Featherstone 520, Coker 9184, and Crawford. Further research will hopefully identify more high yielding lines such as McCormick, Tribute, Neuse, and Roane that have significantly lower scab infection.

**Table 18. Reaction of Entries in the Virginia State Wheat Test to Fusarium Head Blight, 2003 Harvest.**

Line	FHB Incidence (%) <sup>2</sup>	FHB Severity (%) <sup>3</sup>	FHB Index <sup>4</sup>
<b>ROANE(B)</b>	25.0	11.3	3.0
<b>NEUSE(R)</b>	27.5	11.8	3.5
VA00W-38	30.0	9.8	4.0
VA01W-205	37.5	10.4	4.0
<b>USG 3430(RT)</b>	30.0	11.8	4.0
<b>McCORMICK</b>	32.5	13.1	4.5
VA99W-419	30.0	13.2	4.5
<b>USG 3350(RT)</b>	32.5	13.9	4.5
VA00W-464	37.5	12.2	5.0
VAN99W-20	47.5	11.8	6.0
VA01W-99	37.5	15.7	6.0
<b>USG 3209(RT)</b>	45.0	13.3	6.0
VA00W-462	37.5	15.1	6.5
VA97W-24	40.0	15.0	7.5
VA99W-452	57.5	13.2	7.5
GA931241E16(RT)	40.0	16.4	7.5
<b>USG 3650(RT)</b>	45.0	16.0	7.5
<b>COKER 9025(D)</b>	50.0	16.0	8.0
<b>JACKSON(B)</b>	50.0	15.1	8.5
<b>PIONEER 26R58(D)</b>	52.5	14.5	8.5
VA01W-18	40.0	19.2	9.0
<b>PIONEER 2580(D)</b>	52.5	16.0	9.0
<b>MASSEY</b>	47.5	19.9	9.5
VA98W-706	50.0	17.1	9.5
VA01W-258	40.0	19.8	9.5
V9212(D)	47.5	16.5	9.5
V9301	42.5	16.3	9.5
VAN98W-342	50.0	16.4	10.0
<b>COKER 9295(D)</b>	42.5	23.2	10.0
MSU line D8006	50.0	17.2	10.5
<b>SS 560(R)</b>	50.0	16.5	10.5
<b>TRIBUTE</b>	47.5	19.6	10.5
NC98-26143(R)	52.5	19.2	11.0
VA98W-749	52.5	20.6	11.5

**Table 18. Reaction of Entries in the Virginia State Wheat Test to Fusarium Head Blight, 2003 Harvest, continued.**

Line	FHB Incidence (%) <sup>2</sup>	FHB Severity (%) <sup>3</sup>	FHB Index <sup>4</sup>
VA00W-286	57.5	17.1	11.5
VA99W-176	52.5	17.4	12.0
VA01W-317	57.5	21.4	12.0
MD71-5	55.0	18.0	12.0
<b>BENTON</b>	52.5	19.9	12.0
NC98-24050(R)	60.0	18.4	12.0
<b>PIONEER 2684(D)</b>	52.5	17.9	12.0
<b>PIONEER 26R24(D)</b>	52.5	19.9	13.0
<b>SS 550(B)</b>	52.5	22.8	13.5
<b>SS 535(R)</b>	60.0	19.1	13.5
<b>CENTURY II(D)</b>	57.5	19.8	13.5
COKER B960457(D)	52.5	20.2	13.5
MV5-46	55.0	19.7	14.0
<b>SS 520(R)</b>	60.0	20.7	14.0
VA00W-526	57.5	22.1	14.5
VA01W-353	57.5	19.3	14.5
VA00W-562	65.0	23.0	15.0
VA01W-145	65.0	21.1	15.0
<b>SISSON</b>	55.0	20.8	15.5
VA01W-148	62.5	21.0	15.5
MD11-52(R)	57.5	23.4	15.5
VA97W-375RS	62.5	22.7	16.0
VA99W-28	65.0	22.2	16.5
VAN98W-170WS	67.5	23.9	17.5
<b>FEATHERSTONE 520(RT)</b>	62.5	24.8	17.5
VA98W-335	62.5	24.3	18.0
GA931233E17(D)	57.5	23.8	18.0
<b>COKER 9184(D)</b>	70.0	26.8	19.0
VA00W-566	55.0	23.8	19.5
VAN00W-147	80.0	24.7	20.0
VA98W-631	67.5	26.4	21.5
VA01W-112	82.5	26.2	21.5
GA931470E62(D)	67.5	27.7	22.5
<b>CRAWFORD</b>	80.0	32.0	26.0
VA01W-283	80.0	37.0	30.0
VA97W-375WS	92.5	34.0	31.5
<b>Grand Mean</b>	<b>52.86</b>	<b>19.27</b>	<b>12.21</b>
<b>CV (%)</b>	<b>37.90</b>	<b>37.90</b>	<b>68.30</b>
<b>LSD (0.05)</b>	<b>33.40</b>	<b>12.18</b>	<b>13.91</b>

Entries were planted at Blacksburg, VA and were inoculated at booting and 50% heading stages with *Fusarium graminearum* spore suspension.

<sup>2</sup> Scab Incidence (%): Percentage of infected spikes among 50 randomly selected spikes.

<sup>3</sup> Scab Severity (%): Percentage of infected florets divided by total number of florets on the infected spikes.

<sup>4</sup> Scab Index: Scab incidence x scab severity x 100; an overall indicator of scab resistance/susceptibility level.

## SELECTING WHEAT VARIETIES FOR SPECIFIC PLANTING DATES

Anyone can tell the optimum time to plant wheat in hindsight. The question is more difficult when you try to select the best variety to plant when planting earlier than optimum or the best variety when planting later than optimum. We learn something new each year and the freeze (21°F) of March 23<sup>rd</sup> at Warsaw during the 2002 season helped determine the degree of damage that can occur when wheat is jointing too early in the spring.

When planting early, wheat varieties that are day-length sensitive, have a long vernalization (must be exposed to freezing temperatures after germination for at least 6 to 8 weeks), and are relatively late in heading should be selected. Early planted varieties should also have good resistance to barley yellow dwarf virus (or use Gaucho®) and good resistance to powdery mildew (or use a fungicide seed treatment). Day-length sensitive wheat varieties tend to grow less during the winter and do not joint (heads move up from soil level) somewhat regardless of winter temperatures until the day-length increases in mid-March. Day-length insensitive varieties that have been vernalized will grow and begin jointing whenever sufficient heat units have been accumulated. The winter of 2001-2002 in Virginia was very warm so day-length insensitive varieties were jointing by early to mid-March in eastern Virginia. Day-length sensitive varieties such as McCormick, Tribute, Coker 9025, and Roane were less than six inches tall (not jointing) whereas day-length insensitive, early varieties such as Southern States 518, Pioneer Brand 26R61, and AGS 2000 were 9-10 inches tall with the head at least three inches from the soil surface. This is all important because temperatures of 20-25°F will kill the developing head of jointed wheat whereas such temperatures can be tolerated until jointing. Further work will be done to identify more day-length sensitive varieties for early planting. Most of the leading varieties currently available are intermediate in their response to day-length.

The recommendation is to plant varieties that are day-length sensitive with later heading dates when planting prior to optimum planting date. Do not plant early heading day-length insensitive varieties until about the time of the first average frost for your area.