Virginia Cooperative Extension

Grains and Other Agronomic Crops

REVISED 2002

PUBLICATION 424-001

SMALL GRAINS IN 2002

The following are the small grain variety recommendations for Virginia in 2002. The recommendations are based on the agronomic performance in barley and wheat variety tests conducted by the Research and Extension Divisions of Virginia Tech in the various agricultural regions of the state.

SMALL GRAIN VARIETIES RECOMMENDED
Arranged in Order of Maturity
*** indicates that seed should be treated with Baytan®**

COASTAL PLAIN	PIEDMONT		WEST OF BLUE RIDGE
	South of James River	North of James River	
	Barley		
Callao	Callao	Callao	Callao
---	---	Nomini	Nomini
---	---	Starling	Starling
	Wheat		
FFR 518W	FFR 518W	FFR 518W	---
Pioneer Brand 2684	Pioneer Brand 2684	Pioneer Brand 2684	Pioneer Brand 2684
Sisson	Sisson	Sisson	Sisson
SS 520	SS 520	SS 520	SS 520
Pioneer Brand 2580	Pioneer Brand 2580	Pioneer Brand 2580	Pioneer Brand 2580
USG 3209	USG 3209	USG 3209	USG 3209
AGS 2000	AGS 2000	AGS 2000	AGS 2000
Pioneer Brand 26R24	Pioneer Brand 26R24	Pioneer Brand 26R24	Pioneer Brand 26R24
---	---	---	NK Coker 9663*
Century II	Century II	Century II	Century II
SS 550	SS 550	SS 550	SS 550
Featherstone 520	Featherstone 520	Featherstone 520	Featherstone 520
Roane*	Roane*	Roane*	Roane
Jackson*	Jackson*	Jackson*	Jackson
Coker 9184	Coker 9184	Coker 9184	Coker 9184
FFR 535	FFR 535	FFR 535	FFR 535
SS560	SS560	SS560	SS560
Neuse	Neuse	Neuse	Neuse

Virginia Tech

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

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VT/028/0802/1M/cpycntr/424001

VIRGINIA STATE UNIVERSITY

TABLE OF CONTENTS

COMMERCIAL BARLEY ENTRIES

Maryland Agricultural Experiment Station, 1201 Symons Hall, University of Maryland, College Park, Maryland 20742 – Catchpenny.
Virginia Tech and Virginia Crop Improvement Association, 9142 Atlee Station Road, Mechanicsville, VA 23116 - Callao, Nomini, Price, and Wysor.

COMMERCIAL AND EXPERIMENTAL WHEAT ENTRIES

AgriPro Wheat, PO Box 411, 520 East 1050 South, Brookston, IN 47923 – AgriPro M94*1549-1.
AGSouth Genetics, 6830 Lisa Lane, Dunwoody, GA 30338 - AGS 2000.
University of Arkansas, Dept. of Agronomy, 115 Plant Science, Fayetteville, AR 72701 - Pat.
Featherstone Seed Company, 13941 Genito Road, Amelia, VA 23002 - Featherstone 520.
University of Georgia, GA Station, 1109 Experiment Street, Griffin, GA 30223 - GA92485E15.
University of Kentucky, Kentucky Foundation Seed Project, PO Box 11950, Lexington, KY 40579 – KY 90C-292-4-1 and KY 90C-054-6.
University of Maryland, CMREC/Beltsville Facility, 12000 Beaver Dam Road, Laurel, MD 2 0708 – MD11-52.
North Carolina State University, 840 Method Rd, Unit 3, Box 7629, Raleigh, NC 27695-7629 – Neuse.
North Carolina Foundation Seed Producers, Inc., 8220 Riley Hill Road, Zebulon, NC 27597 – Arcia (triticale).
Pioneer Hibred International, Inc., Eastern Division, Tipton, IN 47072 - Pioneer Brand 2580, Pioneer Brand 26R24, Pioneer Brand 26R38, Pioneer Brand 26R46, Pioneer Brand 26R61, Pioneer Brand 2684, and Pioneer Brand XW00J.
Resource Seeds, Inc., 2355 Rice Pike, Union, KY 41091 - Trical 336, RSI 301, and RSI 331 (all triticales).
Royster-Clark, Inc., 70 N. Market St., Mt. Sterling, OH 43143 – Tribute (seed available 2003).
Southern States Cooperative, PO Box 26234, Richmond, VA 23260 - SS 518, SS 520, SS 535, SS 550, SS 560, SS 566, and SS EXP564.
Syngenta Seeds, Inc., PO Box 1240, Winterville, NC 28590 – Century II, Coker 9025, Coker 9184, Coker 9663, and Coker B950943.
Uni-South Genetics, 2640-C Nolensville Road, Nashville, TN 37211 - USG 3209 and USG 3650.
Virginia Tech and Virginia Crop Improvement Association, 9142 Atlee Station Road, Mechanicsville, VA 23111 – Jackson, Massey, McCormick (seed available 2004), Roane, Sisson, and all lines prefixed by VA.
Western Plant Breeders, 6025 W 300 S, Lafayette, IN 47909 – WPB Y93-998B.

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, F.P. and Gary Mish (Shenandoah Valley); Mr. David Starner and Mr. Denton Dixon (Orange).

INTRODUCTION

The attached tables present results from barley and wheat varietal tests conducted in Virginia in 2000-2002. 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 2001-2002 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.

BARLEY VARIETIES

Virginia is an excellent place to produce barley. It fits well into cropping systems and has a yield potential in excess of 115 bushels per acre as shown by the three year averages of current varieties and Virginia Tech lines.

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 the poultry and swine feeders want to buy.

Revival of international markets is going to be tough regardless of actions taken by producers **but if we do not start producing quality barley, we will not be able to meet international barley standards and we will be unable to compete**.

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 Callao or 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 131 bushels/acre the past two years at Warsaw compared to 128 bushels/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/bushel range! Price should be available to producers in the fall of 2003. The other notable on hulled barley is VA97B-388. It has plump, bright color, beautiful seed with a test weight of 51-52 pounds/bushel. It is also the top-yielding variety and has awns that are easily removed at harvest. Markets for top quality hulled barley need to be developed. The other new variety mentioned is Catchpenny from the University of Maryland. It yielded less than average and had less than average test weight.

Another exciting area in barley is the availability of hulless lines. Hulless barley grows and looks like regular barley until it is almost mature. When almost mature the glumes start to separate. The grain is completely separated from the glumes when combined. Hulless barley grain looks more like wheat than traditional barley. As you can see in Table 1 the yields of hulless barley are less than hulled barley but remember that the hull normally makes up about 15 percent of the weight of hulled barley. The lines beginning with “SC” are lines obtained from South Carolina and lines beginning with VA are lines developed by Dr. Carl Griffey’s program at Virginia Tech. The best hulless line produced 124 bu/acre (based on 48 lbs/bu) at one location and averaged 95 bu/acre.

What will we do with hulless barley? Research feeding trials with swine and poultry have shown hulless barley to be excellent feed. There is also tremendous regional interest in hulless barley as an energy source for ethanol. Hopefully at least one of these potential markets will become a reality. As you can see in Table 4 most of the current hulless lines are similar in maturity to Callao barley. Test weight is generally in the 57-59 lbs/bu range. And standability of current 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 2002 HARVEST SEASON

Blacksburg - Planted October 11, 2001. Preplant fertilizer was 25-80-100 on October 1, 2001. Site was fertilized with 65-0-0 plus 0.6 oz Harmony Extra7 on April 5, 2002. Harvest occurred on June 16-17, 2002.

Blackstone - Planted October 18, 2001. Preplant fertilizer was 500 lb 6-12-18 on October 5, 2001. Site was fertilized with 40 lb N using ammonium nitrate on February 1, 2002. Harmony Extra7 at 0.5 oz was applied February 14, 2002. Liquid nitrogen was applied at 80 lb on March 8, 2002. Lannate® LV at 1 pt was applied April 23, 2002. Harvest occurred on June 6, 2002.

Painter - Planted October 19, 2001. Preplant fertilizer was 500 lb 5-10-10 applied October 16, 2001. Forty lb N using 30% N and 0.5 oz Harmony Extra7 were applied February 20, 2002. Forty lb N using 30% N cut 50/50 with water were applied March 28, 2002. Malathion® 57EC was applied at 1.5 pt April 20, 2002. Harvest occurred on June 4, 2002.

Warsaw - Planted October 16, 2001. Preplant fertilizer was 30-80-80-5(S) applied October 11, 2001. Harmony Extra7 at 0.6 oz and Buctril® at 1.5 pt were applied January 17, 2002. Fertilization at 45 lb N using 24-0-0-3 was applied February 6, 2001. Fertilization at 45 lb N using 24-0-0-3 was applied March 26, 2002. Harvest occurred June 5-6, 2002.

Orange - Planted October 11, 2001. Preplant fertilization was 500 lb 5-10-10-6(S) on September 17, 2001. Sixty lb N were applied March 6, 2002. Harvest occurred on June 6 (rep 1) and June 10 (reps 2-4), 2002.

Table 1. Yield performance (bu/acre) of entries in the Virginia Tech Barley Test, 2002 harvest.*

Hulled Lines	Blacksburg		Blackstone		Orange		Painter		Warsaw		Average	
VA97B-388	141	+	97		105		98		157	+	119	+
VA99B-303	121	+	91		106		126	+	150	+	119	+
NOMINI	138	+	86		100		95		144		113	+
VA96-44-304	104		113	+	113		103		133		113	+
VA98B-213	113		101		110		94		139		112	+
VA97B-176	112		101		100		104		142		112	+
VA99B-161	107		105		117	+	90		139		111	
PRICE	105		96		117	+	96		132		109	
VA98B-199	113		93		108		88		141		109	
VA97B-175	118	+	95		96		98		137		109	
VA98B-112	119	+	93		96		104		135		109	
VA00B-182	119	+	91		102		97		137		109	
VA98B-208	97	-	106		94		103		139		108	
VA99B-125	113		95		96		93		144		108	
VA99B-206	101		98		90		105		150	+	108	
VA98B-210	95	-	105		93		104		138		107	
VA98B-221	95	-	100		87		114		138		107	
VA98B-524	93	-	86		93		116	+	149	+	107	
VA00B-7	98	-	85		107		103		132		105	
VA97B-398	99		94		101		97		129		104	
VA97B-142	94	-	86		118	+	94		131		104	
VA00B-11	96	-	95		102		104		125	-	104	
VA00B-9	90	-	92		101		103		131		103	
VA00B-217	80	-	102		100		104		127		102	-
WYSOR	120	+	70	-	103		85	-	128		101	-
CALLAO	104		79		101		89		132		101	-
VA92-42-46	106		77	-	95		94		130		100	-
VA99B-162	110		83		96		82	-	126	-	99	-
CATCHPENNY	89	-	69	-	99		79	-	115	-	91	-
Average	106		92		101		99		136		107	
LSD (0.05)	8		15		15		12		10		5	
C.V.	5		11		11		9		5		8	

Table 1. Yield performance (bu/acre) of entries in the Virginia Tech Barley Test, 2002 harvest, continued.*

Hulless Lines	Blacksburg		Blackstone		Orange		Painter		Warsaw		Average	
VA00H-65	85	+	94	+	91	+	84		124		95	+
VA00H-88	85	'+	90		83		81		128	+	93	+
VA00H-93	84	+	89		75		73		128	+	90	+
VA00H-99	82	+	80		89	+	78		123		90	+
VA00H-74	82	+	90		85		73		114		89	+
VA00H-137	72		88		79		83		124		89	+
VA00H-70	80		85		78		74		121		88	+
VA00H-10	81		82		71		72		121		85	
VA00H-12	83	+	75		65		86	+	109		84	
VA00H-211	61	-	74		92	+	79		112		84	
SC880248	64	-	77		74		83		116		83	
VA00H-15	70		74		68		80		125	+	83	
VA00H-134	74		88		69		75		106	-	83	
VA00H-24	78		80		62	-	67	-	106	-	79	-
VA00H-32	72		75		54	-	76		117		79	-
SC890585	63	-	78		71		67	-	107	-	78	-
VA00H-243	59	-	67	-	68		74		106	-	75	-
VA00H-218	56	-	83		53	-	81		100	-	74	-
Average	74		82		74		77		116		84	
LSD (0.05)	8		10		12		9		9		4	
C.V.	7		9		12		8		6		8	

* 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 10-13% of the dry grain weight, yields of hulless barley are expected to be 10-13% lower than hulled barley.

Table 2. Two-year average yield performance (bu/acre) of entries in the Virginia Tech Barley Tests, 2001 and 2002 harvests.*

Hulled Lines	Blacksburg		Blackstone		Orange		Painter		Warsaw		Average	
VA97B-388	127	+	96		104		119		150	+	120	+
VA97B-176	117	+	89		95		119		141		113	+
VA98B-213	112		92		100		110		136		111	
VA98B-208	102	-	96		92		120	+	139		111	
NOMINI	124	+	80		93		107		140		110	
VA96-44-304	95	-	97		101		118		136		110	
PRICE	106		89		107		114		131		109	
VA97B-175	119	+	85		94		110		134		109	
VA98B-210	101	-	91		91		119		137		109	
VA97B-398	110		90		91		112		129		108	
VA98B-112	117	+	86		91		106		134		108	
VA98B-199	111		83		101		102		141		108	
VA99B-161	107		85		110	+	104		133		108	
VA99B-206	103		93		86		114		137		108	
VA99B-125	117	+	82		89		103		141		107	
VA99B-162	114		78		91		107		127	-	105	
CALLAO	106		76		92		108		128	-	103	-
VA97B-142	89	-	80		104		110		133		103	-
WYSOR	109		72	-	91		96	-	127	-	100	-
VA92-42-46	103		72	-	93		97	-	127	-	100	-
Average	109		86		96		110		135		108	
LSD (0.05)	7		13		13		10		7		5	
C.V.	7		15		11		9		5		10	
Hulless Lines												
VA00H-137	84	+	80	+	75		96	+	122	+	92	+
VA00H-12	89	+	71		69		89		109		86	
VA00H-15	77		68		69		89		119	+	85	
SC880248	74	-	70		77		89		112		85	
VA00H-24	83		71		66		86		107	-	84	
SC890585	76		73		70		82	-	107	-	82	
VA00H-243	70	-	62		70		90		111		81	-
VA00H-32	78		66		60	-	82	-	109		80	-
Average	79		70		69		88		112		84	
LSD (0.05)	5		9		9		6		5		3	
C.V.	7		12		11		7		5		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 10-13% of the dry grain weight, yields of hulless barley are expected to be 10-13% lower than hulled barley.

Table 3. Three-year average yield performance (bu/acre) of entries in the Virginia Tech Barley Tests, 2000, 2001, and 2002 harvests.*

Line	Blacksburg		Blackstone		Orange	Warsaw		Average	
NOMINI	128	+	---		105	137		116	+
VA97B-388	127	+	95		101	139		116	+
VA97B-176	122	+	93		95	140	+	113	
VA98B-213	119		93		98	139		113	
VA97B-175	121		94		95	136		112	
VA96-44-304	102	-	101	+	105	136		111	
PRICE	114		93		105	131		111	
VA97B-398	115		98		92	130		110	
VA98B-112	122	+	89		88	137		110	
VA98B-210	107	-	95		96	135		109	
CALLAO	112		87		90	133		106	-
WYSOR	114		---		93	124	-	104	-
VA92-42-46	109	-	---		93	127	-	104	-
Average	116		91		97	134		110	
LSD (0.05)	6		10		12	6		4	
C.V.	6		12		13	6		10	

* Varieties are ordered by descending statewide yield averages. A plus or minus sign indicates a performance significantly above or below the test average.
Nomini, Wysor, and VA92-42-46 were eaten by either birds or deer in 2000 because they are awnless varieties.

Table 4. Summary of performance of entries in the Virginia Tech Barley Test, 2002 harvest.*

	Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Mar31+)	Height (In)	Leaf Rust (0-9)	Powdery Mildew (0-9)	Net Blotch (0-9)	Spring Freeze Damage (%)	Early Height (In)	Lodging (0.2-10)
Hulled Lines	(5)	(4)	(4)	(4)	(2)	(1)	(1)	(1)	(1)	(3)
VA97B-388	119 +	53.6 +	19 +	35 +	6 +	0	5 -	5	5.8	2.5
VA99B-303	119 +	50.8 -	18 +	32	0 -	0	6	10	6.8	4.5 +
NOMINI	113 +	50.0 -	17	40 +	3	0	2 -	3	6.3	3.2
VA96-44-304	113 +	52.0	14 -	31 -	4 +	0	7 +	3	7.5	2.5
VA98B-213	112 +	52.3	17	31 -	3	1 +	6	3	6.8	3.2
VA97B-176	112 +	54.0 +	15 -	32	3	0	6	8	4.8 -	4.3 +
VA99B-161	111	50.2 -	18 +	30 -	4 +	0	6	6	6.8	1.8 -
PRICE	109	51.7	16 -	32	4 +	0	6	8	6.0	3.1
VA98B-199	109	51.3	18 +	31 -	4 +	0	5 -	3	6.0	4.4 +
VA97B-175	109	51.6	15 -	31 -	3	0	4 -	14	5.0 -	3.1
VA98B-112	109	51.9	16 -	31 -	3	0	4 -	15	5.5 -	3.8
VA00B-182	109	53.2 +	13 -	32	4 +	0	7 +	4	6.8	3.8
VA98B-208	108	52.9 +	17	29 -	3	0	6	16	6.0	2.0 -
VA99B-125	108	52.2	17	30 -	3	1 +	4 -	6	6.5	4.0 +
VA99B-206	108	52.6 +	17	33 +	1 -	0	6	24 +	5.8	3.8
VA98B-210	107	53.5 +	17	29 -	3	0	5 -	8	6.3	1.9 -
VA98B-221	107	52.8 +	17	30 -	3	0	4 -	6	6.3	2.2 -
VA98B-524	107	49.4 -	19 +	30 -	0 -	0	4 -	26 +	8.0 +	2.5
VA00B-7	105	51.2	16 -	31 -	1 -	0	6	14	6.8	4.0 +
VA97B-398	104	52.2	15 -	30 -	3	0	7 +	8	6.3	2.9
VA97B-142	104	52.2	15 -	32	3	0	8 +	0	9.0 +	3.6
VA00B-11	104	50.6 -	16 -	31 -	2 -	0	6	16	7.3	5.2 +
VA00B-9	103	50.8 -	16 -	31 -	2 -	0	7 +	8	6.5	5.2 +
VA00B-217	102 -	52.9 +	17	31 -	0 -	0	8 +	16	7.3	2.3 -
WYSOR	101 -	50.2 -	19 +	38 +	6 +	0	6	0	4.8 -	4.1 +
CALLAO	101 -	52.8 +	15 -	30 -	3	0	5 -	15	6.0	4.4 +
VA92-42-46	100 -	50.1 -	16 -	38 +	1 -	0	8 +	4	8.5 +	2.0 -
VA99B-162	99 -	50.4 -	19 +	30 -	5 +	1 +	5 -	19	8.3 +	2.2 -
CATCHPENNY	91 -	49.0 -	16 -	34 +	5 +	0	8 +	1	9.3 +	1.7 -
Statewide Average	107	51.7	17	32	3	0	6	9	6.7	3.2
LSD (0.05)	5	0.8	1	1	1	1	1	15	1.2	0.8
C.V.	8	2.4	6	4	34	420	14	120	12.4	31.4

* 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.

Spring freeze damage is the percentage of tillers killed by a low temperature of 21 degrees F. on March 2-3, 2002. Ratings were made on April 29, 2002.

Early height is an indication of the daylength sensitivity of a variety. The association between early growth and freeze injury in barley is much lower than in wheat.

Table 4. Summary of performance of entries in the Virginia Tech Barley Test, 2002 harvest,* continued.

	Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Mar31+)	Height (In)	Leaf Rust	Powdery Mildew	Net Blotch	Spring Freeze Damage (%)	Early Height (In)	Lodging (0.2-10)
					(0-9)					
Hulless Lines	(5)	(4)	(4)	(4)	(2)	(1)	(1)	(1)	(1)	(3)
VA00H-65	95 +	58.5 +	15	33	6 +	0	7	4 -	8.3	2.0 -
VA00H-88	93 +	57.4	16 +	33	5	0	7	18	8.3	2.3
VA00H-93	90 +	57.7	15	32 -	5	0	8 +	20	8.5	2.2
VA00H-99	90 +	57.7	16 +	32 -	6 +	0	7	14	8.5	2.1
VA00H-74	89 +	57.7	15	33	6 +	0	8 +	14	8.0	2.4
VA00H-137	89 +	56.1	18 +	32 -	1 -	0	8 +	21	8.3	2.9
VA00H-70	88 +	57.6	16 +	33	6 +	0	8 +	16	8.5	2.9
VA00H-10	85	57.1	16 +	33	6 +	0	7	21	8.0	2.8
VA00H-12	84	55.8 -	15	34 +	5	0	6 -	35	8.5	3.1
VA00H-211	84	57.9 +	14 -	34 +	5	0	8 +	4 -	7.5	2.3
SC880248	83	56.0	15	35 +	7 +	0	8 +	16	9.3	3.0
VA00H-15	83	56.3	16 +	35 +	5	0	6 -	43 +	9.0	3.2
VA00H-134	83	56.7	16 +	28 -	6 +	0	7	30	8.8	2.8
VA00H-24	79 -	56.2	15	31 -	6 +	0	7	21	8.8	2.6
VA00H-32	79 -	56.2	16 +	32 -	3 -	0	6 -	50 +	8.5	3.0
SC890585	78 -	56.0	14 -	35 +	8 +	0	8 +	20	7.5	2.9
VA00H-243	75 -	55.0 -	15	33	6 +	0	9 +	28	8.3	3.8 +
VA00H-218	74 -	56.6	15	28 -	4 -	0	8 +	43 +	7.0 -	2.0 -
Statewide Average	84	56.8	15	33	5	0	7	23	8.3	2.7
LSD (0.05)	4	1.0	1	1	1	0	1	19	1.1	0.7
C.V.	8	7.0	7	4	20	606	12	58	9.2	31.2

* 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.

Spring freeze damage is the percentage of tillers killed by a low temperature of 21 degrees F. on March 2-3, 2002. Ratings were made on April 29, 2002.

Early height is an indication of the daylength sensitivity of a variety. The association between early growth and freeze injury in barley is much lower than in wheat.

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. "A" is Apron®, "B" is Baytan®, "C" is Captan®, "D" is Dividend®, "R" is raxil, "T" is thiram, and "V" is Vitavax®. Virginia Tech experimental lines and some of the public varieties such as Massey were treated with raxil and thiram.

Wheat yields in eastern Virginia in 2002 were affected by a late spring freeze on March 23rd that killed many of the primary tillers on varieties that are day-length insensitive. The warm winter allowed day-length insensitive varieties to produce excessive growth and begin jointing whereas day-length sensitive varieties did not joint until the longer days of March. Selecting varieties based on day-length sensitivity and interaction between varieties and planting date will be discussed later.

Note that the future for varieties adapted to Virginia conditions is very positive. Dr. Carl Griffey, Virginia Tech's small grains breeder, has many new lines shown in the table starting with "VA" 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. Tribute, a new variety marketed by Royster Clark, was the top yielding variety in the state in 2002, as well as over the past three years. It also was the top yielder in the no-till test. Tribute has excellent test weight, is shorter than average with good standability, and medium maturity. Tribute is also one of the most day length sensitive varieties available as shown by a plant height of only five inches in March 2002 at Warsaw (Table 8). Tribute has excellent resistance to powdery mildew, leaf rust, and barley yellow dwarf. It has moderate resistance to stripe rust. The only bad news is that seed will not be available to producers until Fall of 2003. McCormick, a new release from Virginia Tech, was second in yield statewide with an average of 86 Bu/A. It has good standability, is short in height and medium in maturity. McCormick has excellent test weight and excellent resistance to powdery mildew and leaf rust. It has moderate resistance to scab. Seed will not be available to producers until fall of 2004.

Varieties averaging above 79 Bu/A in 2002 and statistically similar in yield to Tribute in 2002 included Sisson, SS 550, SS 520, SS 560, USG 3209, USG 3650, Pioneer Brand 2580 and Pioneer Brand 26R24. Sisson is a relatively new release from Virginia Tech that has performed well over years and locations. It has good test weight, standability, and powdery mildew resistance. Sisson is moderately early in maturity and short in height. SS 520 and SS 560 are relatively new releases from Southern States. SS 550 has good test weight, standability, and powdery mildew resistance. It is medium in maturity and of average height. SS 560 has good resistance to powdery mildew and leaf rust. SS 560 has consistently performed well in the no-till test at Warsaw over years. Standability is generally above average. SS 520 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 but is moderately susceptible to leaf rust and stripe rust. USG 3209 has good powdery mildew resistance, but is susceptible to leaf rust. USG 3209 continued to be a top performer, even with considerable spring freeze in 2002 at some locations. It is early and short, but lodges more than average, and has good test weight. USG 3650 is a new release from Uni-South Genetics that is three days later than Sisson and two inches taller than average with good standability. It was average in powdery mildew infection but has good leaf rust resistance. Pioneer Brand 2580 and Pioneer Brand 26R24 have good standability, average mildew infection and above average leaf rust infection.

Released varieties producing average yields over locations in 2002 and the past two years include SS 535, Pioneer Brand 2684, Jackson, Featherstone 520, Coker 9184, AGS 2000 and Neuse. Neuse is a new release from N. C. State having good resistance to mildew, scab, leaf rust and Hessian fly. Refer to Table 8 for evaluation of maturity, test weight, height, standability, and disease resistance of these varieties.

Released varieties yielding less than average in 2002 include Century II, Roane, Pioneer Brand 26R38, Pioneer Brand 26R61, Pioneer Brand 26R46, SS 566, SS 518, Coker 9025, Coker 9663, Massey, and Pat. Pat is a new release from Arkansas. None of these varieties have been statistically above average in yield at any test location in the past two years except Pat at Blacksburg in 2002. Most of these "old stand-by" varieties yield well but newer lines generally yield better. There are always exceptions such as the above average performance of Coker 9663 and Baytan®-treated Roane at Blacksburg where powdery mildew is less likely to be severe.

SUMMARY OF WHEAT MANAGEMENT PRACTICES FOR THE 2002 HARVEST SEASON

Blacksburg - Planted October 11, 2001. Preplant fertilizer was 25-80-100 applied October 1, 2001. Harmony Extra7 was applied at 0.6 oz on April 5, 2002 with 85-0-0. Harvest occurred on July 6, 2002.
Warsaw - Planted October 17, 2001. Preplant fertilizer was 30-80-80-5(S) applied October 11, 2001. Fungicide plots received 4 oz Tilt® on January 16, 2002. Harmony Extra® at 0.6 oz and Buctril® at 1.5 pt were applied January 17, 2002. Forty-five lb N using 24-0-0-3(S) was applied February 6, 2001. Fifty-five lb N using 24-0-0-3(S) was applied March 26, 2002. Warrior T7 was applied at 2.56 oz on April 18, 2002. Harvest occurred June 18-19, 2002.
Blackstone – Planted October 18, 2001. Preplant fertilizer was 500 lb 6-12-18 applied October 5, 2001. Site was fertilized with 40 lb N using ammonium nitrate on February 1, 2002. Harmony Extra7 at 0.5 oz was applied February 14, 2002. Liquid nitrogen was applied at 80 lb on March 8, 2002. Lannate® LV at 1 pt was applied April 23, 2002. Harvest occurred on June 13, 2002. A late spring freeze on March 4, 2002 reduced yields and quality of wheat harvested.
Painter - Planted October 19, 2001. Preplant fertilizer was 500 lb 5-10-10 applied October 16, 2001. Forty lb N using 30% N and 0.5 oz Harmony Extra7 were applied February 20, 2002. Sixty lb N using 30% N cut 50/50 with water were applied March 28, 2002. Malathion® 57EC was applied at 1.5 pt on April 20, 2002. Harvest occurred on June 12, 2002.
Holland - Planted October 24, 2001. Preplant fertilizer was 600 lb 5-15-20 on October 23, 2001. On February 6, 2002 40 units of N using 30% N and Harmony Extra® at 0.5 oz was applied. On March 6, 2002, 80 units N were applied using 30% N. Fury® at 2 oz was applied April 18, 2002. Harvest occurred June 5, 2002.
Orange - Planted October 11, 2001. Preplant fertilizer was 500 lb 5-10-10-6(S) applied September 17, 2001. Warrior® at 3 oz was applied December 7, 2001. Sixty lb N were applied March 6, 2002. Harvest occurred on June 17, 2002.
Shenandoah Valley - Planted October 10, 2001. Two tons of poultry litter were applied October 1, 2001. Two tons of lime were applied November 6, 2001. Forty lb N were applied February 15, 2002. Sixty lb N were applied March 20, 2002. Site was not harvested due to temperatures of 21-25ºF in mid-May when the wheat was at the flowering to early grain fill stage.

Table 5. Yield performance (bushels/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2002 harvest.*

	Coastal Plain Region								Piedmont and Blue Ridge Region								State-wide	
Line	Holland		Painter		Warsaw		Avg.		Black-stone		Blacks-burg		Orange		Avg.		Avg.	
VA00W-526	84	+	96	+	113	+	96	+	74		79	+	103		85	+	90	+
VA97W-375RS	90	+	92	+	115	+	98	+	72		79	+	96		82		89	+
VA97W-24	92	+	87		117	+	98	+	59		71		102		77		87	+
TRIBUTE	81		96	+	107	+	93	+	67		78	+	98		81		87	+
McCORMICK	80		91	+	105	+	91		76		77		95		82		86	+
SISSON	86	+	89	+	110	+	94	+	59		75		96		77		85	+
VA97W-375WS**	86	+	95	+	114	+	97	+	68		70		86		75		85	+
SS 550(R)	89	+	87		112	+	96	+	61		70		97		76		85	+
SS 520(R)	82		96	+	111	+	95	+	71		65		93		77		84	+
SS 560(R)	84	+	85		110	+	92		58		77		98		78		84	+
VA98W-335	86	+	92	+	107	+	95	+	62		68		92		74		83	+
VA99W-278	84	+	84		105	+	90		72		69		93		78		83	+
VA00W-459	77		80		102		85		81		66		92		81		83	+
MD11-52(R)	83	+	90	+	108	+	93	+	70		66		88		74		83	+
VA98W-706	82		87		102		89		67		71		88		75		82	+
VA99W-131	81		77		107	+	89		68		65		101		78		82	+
VA00W-130	83	+	82		107	+	90		66		66		94		75		82	+
VAN00W-147	85	+	85		102		90		64		68		92		74		82	+
VA98W-749	76		91	+	105	+	89		61		68		92		74		81	+
VA98W-590	85	+	84		98		89		61		73		91		75		81	+
VAN98W-342	77		85		104		88		67		72		89		76		81	+
VA00W-464	77		84		104		87		72		61		97		76		81	+
USG 3209(RT)	88	+	86		104		92		54		73		87		71		81	+

Table 5. Yield performance (bushels/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2002 harvest, continued.*

	Coastal Plain Region				Piedmont and Blue Ridge Region				State-wide
Line	Holland	Painter	Warsaw	Avg.	Black-stone	Blacks-burg	Orange	Avg.	Avg.
USG 3650 (RT)	83 +	84	99	88	63	71	90	75	81 +
PIONEER 2580(B)	81	91 +	105 +	91	70	72	78	73	81 +
VA99W-176	85 +	90 +	109 +	94 +	50	63	93	69	80 +
VA98W-631	74	91 +	104	88	58	70	88	72	79
VA99W-419	77	81	97	85	73	71	83	75	79
PIONEER 26R24(B)	76	84	105 +	87	47	75	96	73	79
WPB Y93-998B	81	78	103	87	69	65	83	73	79
SS EXP564(R)	75	75	94	81	58	74	95	75	78
VA00W-381	77	80	91 -	82	59	70	90	73	77
KY90C-054-6	70	76	96	80	54	86 +	83	74	77
SS 535(R)	77	84	99	86	58	67	83	69	77
VA00W-38	78	68 -	89 -	79	59	74	86	73	76
NEUSE	81	77	91 -	83	57	70	87	71	76
PIONEER 2684(B)	72	91 +	95	85	59	64	82	68	76
AGRIPRO M94*1549-1	61 -	74	102	77	65	70	93	76	76
JACKSON(B)	77	74	96	82	55	77	79	69	75
FEATHERSTONE 520(B)	73	80	96	82	61	66	82	70	75
COKER 9184(D)	76	73	94	81	56	76	76	69	74
AGS2000(TV)	70	67 -	98	78	52	72	91	72	74
VA99W-461	75	69	95	80	54	69	82	68	73
VA00W-562	80	72	90 -	80	58	62	76	66	73
CENTURY II(D)	71	69	98	79	42	66	91	66	72 -
COKER B950943	71	87	94	83	52	63	77	64	72 -
PIONEER XW00J	70	74	95	80	51	60 -	88	66	72 -
ROANE(B)	74	60 -	93	76	50	72	80	67	71 -
PIONEER 26R38(B)	68 -	71	95	77	44	69	86	66	71 -
SS 566(R)	79	73	93	81	45	63	81	63	71 -
KY90C-292-4-1	75	66 -	93	79	49	64	78	63	70 -
GA92485E15(RT)	62 -	67 -	93	73 -	45	75	82	67	70 -
SS 518(R)	67 -	63 -	93	74	46	62	92	67	70 -
VA00W-337	73	72	87 -	77	54	64	70	63	69 -
VA99W-188	63 -	65 -	82 -	69 -	60	62	77	67	68 -
PAT	62 -	61 -	78 -	67 -	48	83 +	76	69	68 -
PIONEER 26R61(B)	69 -	60 -	87 -	72 -	40	68	84	64	68 -
VA99W-200	58 -	55 -	81 -	64 -	52	65	90	69	67 -
VA00W-194	68 -	69	88 -	74	36	54 -	90	60	67 -
COKER 9025(D)	66 -	69	85 -	72 -	43	66	78	62	67 -
VAN00W-44	62 -	69	81 -	70 -	48	62	76	62	66 -
MASSEY	71	72	79 -	74	31	65	77	57 -	65 -
COKER 9663(D)	55 -	61 -	90 -	67 -	34	77	79	63	65 -
PIONEER 26R46(B)	60 -	52 -	81 -	64 -	51	57 -	71	60	62 -
VAN00W-187	48 -	51 -	73 -	56 -	53	57 -	76	62	59 -
Average	76	78	98	83	58	69	87	71	76
LSD (0.05)	7	10	7	10		9		13	4
C.V.	7	7	4	14	17	9	6	22	8

* Varieties are ordered by descending statewide yield averages. These averages include data from Blackstone. 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, 2001 and 2002 harvests.*

Line	Coastal Plain Region								Piedmont and Blue Ridge Region										State-wide Avg.	
	Holland		Painter		Warsaw		Avg.		Black-stone		Blacks-burg		Orange		Avg.					
TRIBUTE(RT)	75	+	99	+	101	+	90	+	69	+	86	+	95	+	81	+	86	+		
VA97W-375RS(RT)	74		96	+	105	+	89	+	73	+	78		91	+	79		84	+		
McCORMICK	74		91	+	101	+	87		75	+	79		90	+	80		84	+		
SS550	75	+	95	+	103	+	89	+	66		76		94	+	77		83	+		
VA97W-24(RT)	80	+	91	+	100	+	89	+	64		80		96	+	78		83	+		
SISSON (RT)	75	+	93	+	102	+	88	+	67		77		93	+	77		82	+		
VA97W-375WS(RT)**	71		97	+	104	+	89	+	70	+	76		84		75		82	+		
SS520	76	+	94	+	101	+	89	+	69	+	75		88		76		82	+		
SS 560(R)	76	+	84		102	+	86		65		83	+	90	+	78		82	+		
USG 3209(RT)	80	+	90	+	96	+	88	+	62		78		87		74		81	+		
PIONEER 26R24(B)	72		92	+	96	+	85		62		78		93	+	76		80	+		
VA98W-590(RT)	74		91	+	94		85		67		74		90	+	75		80	+		
VA98W-706(RT)	71		91	+	97	+	85		67		79		83		75		80	+		
VA98W-749(RT)	69		96	+	96	+	85		64		72		89		73		79	+		
VA99W-176(RT)	70		94	+	100	+	86		56		74		89		71		79	+		
PIONEER 2580(B)	69		89		90		81		68	+	74		78	-	73		77			
CENTURY II(D)	74		78		91		80		54	-	79		88		71		76			
FFR 535(RT)	70		86		88		80		63		75		78	-	71		76			
PIONEER 2684(B)	61	-	90	+	89		78		64		72		80		71		74			
JACKSON(B)	70		79		84	-	76		59		84	+	77	-	72		74			
COKER 9184(D)	66		78		88		76		64		76		77	-	71		74			
AGS2000	66		73	-	83	-	73		61		80		88		74		74			
FEATHERSTONE 520(B)	64		82		85	-	75		65		72		80		71		73	-		
NEUSE(R)	69		79		85	-	77		59		72		84		70		73	-		
FFR 518(RT)	66		77		92		77		56		70		87		69		73	-		
VA99W-200(RT)	59	-	79		89		74		62		70		88		71		73	-		
ROANE(B)	67		70	-	84	-	73		60		80		77	-	71		72	-		
PIONEER 26R38(B)	60	-	78		91		75		56		70		84		68		71	-		
FFR 566(RT)	69		76	-	87		77		53	-	69		76	-	65		71	-		
KY90c-292-4-1(R)	65		82		86	-	76		58		65	-	77	-	65		71	-		
PIONEER 26R61(B)	59	-	74	-	87		72	-	51	-	68	-	80		65		68	-		
COKER 9025(DA)	69		74	-	74	-	72	-	53	-	67	-	74	-	64		68	-		
PAT(R)	62		65	-	76	-	67	-	55		80		74	-	69		68	-		
COKER 9663(DA)	62		65	-	81	-	69	-	46	-	81		75	-	66		67	-		
PIONEER 26R46(B)	57	-	71	-	81	-	69	-	59		64	-	71	-	64		66	-		
MASSEY	63	-	71	-	74	-	69	-	46	-	60	-	74	-	58	-	63	-		
Average	69		83		91		80		61		75		84		72		76			
LSD (0.05)	6		7		5		8		7		7		6		9		3			
C.V.	9		7		5		16		12		8		6		20		10			

* Varieties are ordered by descending statewide yield averages. These averages include data from Blackstone. A plus or minus sign indicates a performance significantly above or below the test average.
**Wheat line having white seed color.

Table 7. Three-year average yield performance (bu/acre) of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Tests, 2000, 2001 and 2002 harvests.*

Line	Coastal Plain Region				Piedmont and Blue Ridge Region				Statewide
	Holland	Painter	Warsaw	Avg.	Blackstone	Blacksburg	Orange	Avg.	Avg.
McCORMICK	73 +	88 +	98 +	85 +	75 +	81	92 +	82 +	84 +
TRIBUTE	74 +	95 +	98 +	87 +	69 +	84	92 +	81 +	84 +
VA97W-375RS(RT)	72	94 +	100 +	86 +	70 +	81	89 +	79	83 +
USG 3209	78 +	88 +	96 +	87 +	64	82	86	77	82 +
SS550	73 +	92 +	99 +	87 +	66	81	88	78	82 +
SISSON(RT)	73 +	91 +	101 +	87 +	67	82	88	78	82 +
SS520	72	94 +	99 +	86 +	67	81	85	77	82 +
VA97W-24	76 +	89 +	98 +	86 +	64	84	86	77	82 +
PIONEER 26R24(B)	72	90 +	93	84	64	84	93 +	79	81 +
SS 560(R)	75 +	83	100 +	85 +	64	87 +	85	78	81 +
VA98W-749	67	91 +	96 +	83	62	74	92 +	75	79 +
CENTURY II(D)	72	81	92	80	55 -	81	90 +	74	77
PIONEER 2580(B)	67	84	86	78	67	78	81	75	76
AGS 2000	68	77	81 -	74	63	85 +	85	77	76
PIONEER 2684(B)	63 -	85	86	76	63	75	82	73	75
FFR 518(R)	68	79	89	78	61	73 -	85	72	75
FFR 535	69	81	85	77	63	77	78 -	72	75
FEATHERSTONE 520(B)	64	81	82 -	75	63	75	82	73	74
JACKSON(B)	69	75 -	81 -	74	58	86 +	81	74	74
PIONEER 26R38(B)	63 -	80	87	75	58	73 -	89 +	72	74
PIONEER 26R61(B)	62 -	76 -	87	74	55 -	74	86	71	73 -
ROANE	68	69 -	79 -	72 -	61	84	78 -	74	73 -
FFR 566(R)	65	74 -	83 -	73 -	55 -	71 -	81	68	71 -
PIONEER 26R46(B)	60 -	73 -	78 -	69 -	61	71 -	78 -	69	69 -
COKER 9025(DA)	64	74 -	77 -	71 -	54 -	75	76 -	68	69 -
COKER 9663(DA)	61 -	69 -	78 -	68 -	45 -	83	76 -	67 -	68 -
MASSEY	62 -	70 -	76 -	69 -	50 -	65 -	76 -	63 -	66 -
Average	68	82	89	79	62	79	84	74	76
LSD (0.05)	5	6	5	6	6	6	5	7	3
C.V.	9	7	6	15	12	8	7	19	9

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

Table 8. Summary of performance of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2002 harvest.*

Line	Yield (Bu/a)	Test Wt. (Lb/bu)	Date Head-ed (Mar31+)	Ht. (In)	Lodg-ing (0.2-10)	Powdery Mildew (0-9)	Leaf Rust (0-9)	Barley Yellow Dwarf Virus (0-9)	Stripe Rust (0-9)	Early Ht. (In)
	(5)	(5)	(4)	(3)	(3)	(3)	(2)	(2)	(1)	(1)
VA00W-526	94 +	59.3 +	27 +	32 -	0.9	0 -	1	2	0	7.2
VA97W-375RS	93 +	58.6	26	31 -	0.3	0 -	1	2	0	6.5
VA97W-24	93 +	58.1 -	28 +	36 +	0.3	1 -	2	3	0	6.7
TRIBUTE	91 +	60.7 +	26	32 -	0.7	0 -	0	1	0	5.0 -
SISSON	90 +	58.6	25 -	32 -	1.5	1 -	4	2	2	7.3
SS 550(R)	90 +	58.3	26	34	1.3	1 -	3	1	2	7.0
SS 560(R)	90 +	58.7	27 +	33 -	0.3	2	2	3	0	6.0
VA97W-375WS**	89 +	58.2 -	26	31 -	0.3	0 -	0	2	0	6.5
McCORMICK	89 +	60.0 +	26	32 -	0.5	1 -	0	2	0	5.5 -
VA98W-335	88 +	59.1 +	28 +	30 -	0.3	1 -	1	3	0	6.3
VA99W-176	87 +	57.9 -	24 -	35 +	1.3	0 -	3	2	0	6.8
USG 3209(RT)	87 +	57.9 -	24 -	31 -	2.0 +	1 -	5	2	0	8.0
SS 520(R)	87 +	58.2 -	24 -	36 +	0.9	1 -	4	3	2	8.7 +
VA98W-590	86 +	59.8 +	27 +	33 -	1.0	1 -	1	2	0	6.2
VA99W-131	86 +	58.3	27 +	34	0.2 -	2	2	3	0	6.2
VA99W-278	86 +	58.0 -	27 +	35 +	0.4	0 -	7	3	1	5.8 -
VAN00W-147	86 +	57.9 -	27 +	35 +	0.7	0 -	1	3	0	6.3
MD11-52(R)	86 +	58.7	26	30 -	0.3	0 -	1	2	0	7.5
PIONEER 26R24(B)	86 +	58.8	25 -	35 +	0.9	2	3	2	1	6.3
VA98W-749	85 +	58.0 -	28 +	33 -	0.6	0 -	0	3	1	6.7
VA98W-706	85 +	59.4 +	26	32 -	0.3	1 -	0	3	0	5.5 -
VA00W-130	85 +	58.4	26	31 -	0.4	2	5	3	0	7.3
USG 3650 (RT)	85 +	58.4	28 +	36 +	1.1	2	1	3	0	6.7
VAN98W-342	84	58.5	25 -	31 -	0.2 -	0 -	1	2	0	6.3
VA98W-631	84	57.4 -	27 +	34	0.2 -	3	0	2	0	6.2
PIONEER 2580(B)	84	57.6 -	25 -	34	0.4	1 -	4	3	0	8.2
VA00W-459	83	58.0 -	25 -	31 -	0.5	2	3	2	0	8.0
VA00W-464	83	58.5	25 -	32 -	0.4	1 -	0	3	1	7.7
KY90C-054-6	82	57.5 -	28 +	39 +	0.4	5 +	3	2	0	6.0
SS EXP564(R)	82	58.1 -	29 +	36 +	1.2	5 +	3	2	1	4.2 -
VA99W-419	81	58.0 -	27 +	34	0.2 -	1 -	3	2	0	5.8 -
VA00W-381	81	59.5 +	24 -	33 -	0.5	1 -	3	2	0	8.0
NEUSE	81	59.5 +	30 +	35 +	0.5	0 -	0	2	1	6.0
SS 535(R)	81	59.5 +	28 +	34	1.0	2	3	2	0	5.8 -
WPB Y93-998B	81	59.4 +	26	34	0.2 -	0 -	3	3	0	5.3 -
JACKSON(B)	80	59.3 +	28 +	37 +	2.3 +	4 +	3	2	0	7.3
AGS2000(TV)	79	58.7	24 -	33 -	2.9 +	2	1	3	0	9.0 +
PIONEER 2684(B)	79	60.0 +	24 -	33 -	0.2 -	1 -	3	2	0	6.8
AGRIPRO M94*1549-1	79	58.7	23 -	32 -	1.9 +	1 -	1	3	0	8.3
VA99W-461	78	57.6 -	28 +	34	0.2 -	2	2	2	0	5.5 -
CENTURY II(D)	78	58.8	26	34	1.5	4 +	2	3	0	7.7
FEATHERSTONE 520(B)	78	59.4 +	27 +	34	1.5	2	3	3	0	8.7 +

Table 8. Summary of performance of entries using standard treatment (no fungicide) in the Virginia Tech Wheat Test, 2002 harvest, continued.*

Line	Yield (Bu/a)		Test Wt. (Lb/bu)		Date Head-ed (Mar31+)		Ht. (In)		Lodg-ing (0.2-10)		Powdery Mildew (0-9)		Leaf Rust (0-9)	Barley Yellow Dwarf Virus (0-9)	Stripe Rust (0-9)	Early Ht. (In)	
	(5)		(5)		(4)		(3)		(3)		(3)		(2)	(2)	(1)	(1)	
COKER 9184(D)	78		60.0	+	29	+	34		0.5		2		0	3	0	6.2	
COKER B950943	77	-	57.5	-	26		35	+	0.4		3	+	0	3	0	9.0	+
PIONEER 26R38(B)	77	-	57.9	-	26		36	+	1.8	+	2		2	2	0	10.3	+
PIONEER XW00J	77	-	59.7	+	28	+	34		0.2	-	3	+	2	2	0	6.3	
SS 566(R)	77	-	58.3		29	+	38	+	0.5		1	-	0	3	0	6.5	
ROANE(B)	76	-	59.7	+	29	+	34		0.2	-	5	+	1	2	0	5.3	-
VA00W-562	76	-	59.5	+	27	+	36	+	0.7		1	-	2	2	0	5.7	-
KY90C-292-4-1	75	-	58.1	-	27	+	34		0.2	-	3	+	3	2	0	5.5	-
GA92485E15(RT)	75	-	59.8	+	24	-	35	+	1.9	+	3	+	1	2	0	9.5	+
SS 518(R)	75	-	58.0	-	24	-	32	-	5.1	+	1	-	0	3	0	9.8	+
PIONEER 26R61(B)	74	-	59.9	+	25	-	35	+	1.4		3	+	1	3	0	9.8	+
VA00W-194	73	-	56.8	-	28	+	32	-	1.0		3	+	1	4	0	8.8	+
VA00W-337	73	-	57.5	-	27	+	31	-	1.9	+	1	-	0	3	0	10.7	+
MASSEY	72	-	58.0	-	26		37	+	3.0	+	2		6	3	0	8.7	+
PAT(R)	72	-	58.4		31	+	40	+	0.2	-	5	+	3	2	0	5.2	-
COKER 9663(D)	72	-	58.3		25	-	39	+	1.7	+	5	+	1	2	0	7.3	
COKER 9025(D)	72	-	57.3	-	31	+	35	+	1.4		5	+	0	2	1	4.0	-
VA99W-200	70	-	58.4		23	-	32	-	1.3		3	+	1	2	0	8.5	+
VA99W-188	70	-	58.6		23	-	31	-	0.4		2		0	3	0	8.8	+
VAN00W-44	70	-	58.9		24	-	30	-	0.6		2		1	2	0	10.2	+
PIONEER 26R46(B)	64	-	58.3		25	-	33	-	0.7		2		2	3	0	9.0	+
VAN00W-187	61	-	57.3	-	23	-	32	-	0.7		4	+	0	3	0	9.2	+
Statewide Average	81		58.6		26		34		0.9		2		2	2	0	7.2	
LSD (0.05)	4		0.4		1		1		0.7		1				---	1.3	
C.V.	7		1.1		4		3		89.5		34		43	38	---	11.4	

* Varieties are ordered by descending statewide yield averages. These averages do not include yield or test weight data from Blackstone. 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.

**Wheat line having white seed color.

Early height (March 8) is an indication of the daylength sensitivity of a variety. Taller varieties began jointing in early March and thus were taller.

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 30-80-50-5(S) was applied October 5, 2001. The wheat varieties were planted on October 17, 2001 with a Hege plot drill at 30 seeds/row. Additional fertilizer and herbicide were applied as follows.
Harmony Extra® at 0.6 oz was applied January 15, 2002. Sixty lb N using 24-0-0-3(S) was applied February 13, 2001. Forty-five lb N using 24-0-0-3(S) was applied March 8, 2002. Forty lb N using 24-0-0-3 was applied April 18, 2002. Warrior T7 was applied at 2.56 oz April 18, 2002. Harvest occurred June 19, 2002.

An excellent stand was obtained and the plots looked great until temperatures dipped to 21ºF on March 23rd after the wheat was jointing (Zadoks G.S. 32 or Feekes 7). All of the primary tillers of day-length insensitive varieties were killed on March 23rd whereas day-length sensitive varieties that had not jointed had very little freeze damage. Freeze damage was more severe in the no-till than conventional tilled plots planted on the same date. (Refer to the variety – day-length discussion for further information. The low test weights in this test are mostly related to freeze injury and scab infection as shown in Table 11.

The first thing to notice is that the average yield over the past three years when planting wheat no till into corn stubble is 85 Bu/A for all varieties and over 90 Bu/A for Tribute, McCormick, SS 550, SS 560, SS 520, Sisson, and Pioneer Brand 26R24! Scab has been present in the no till wheat plots each year but only reached economic levels in 1998. However, development of wheat varieties with genetic scab resistance will be another giant step toward long term success when no-tilling wheat into corn residue. Excellent variety choices for no-till wheat for fall planting in 2002 include SS 550, SS 560, SS 520, Sisson and Pioneer Brand 26R24. USG 3650 performed well in 2002. Roane is the only variety available with improved genetic resistance to scab. This may make it a good variety, using fungicides to control powdery mildew, for some acreage of no till wheat planted into corn even though it produced only average yields without major scab.

Table 9. Summary of performance of entries in the Virginia Tech No-Till Wheat Test at Warsaw, 2000, 2001, and 2002 harvests.*

	Average Yield (Bu/acre)			Test	Lodg-	Date Head-		Pow- dery	Leaf	Freeze
Line	3-year	2-year	1-year	Wt. (Lb/bu)	ing (0.2-10)	ed (Mar31+)	Ht. (In)	Mildew (0-9)	Rust	Damage (1-5)
VA97W-24	101	102	106	54.2	2.0	22	31	2	5	2
VA00W-526	---	---	106	55.3	1.1	20	29	0	5	1
TRIBUTE	96	99	101	57.3	0.4	20	29	0	2	1
McCORMICK	94	93	98	56.1	3.4	22	30	1	3	1
VA99W-131	---	---	97	53.9	0.2	21	30	3	8	3
SS 550(R)	95	95	96	53.2	1.5	20	30	1	7	3
SS 560(R)	91	93	96	54.4	0.3	21	30	1	7	2
VA98W-590	---	92	93	56.4	5.2	21	29	1	3	2
USG 3650 (RT)	---	---	93	54.3	1.6	22	31	1	6	2
JACKSON(B)	85	88	92	55.4	2.9	22	32	5	6	2
VA99W-176	---	96	92	52.5	1.5	19	31	1	7	2
VA98W-335	---	---	92	54.1	0.4	21	27	0	4	2
VA98W-706	---	90	91	54.2	0.2	20	28	0	5	2
SS 520(R)	94	94	91	52.8	0.3	20	31	2	6	2
SISSON	94	95	90	52.3	0.6	18	28	3	7	2
VA99W-419	---	---	90	52.9	0.2	21	30	3	7	2
VA99W-461	---	---	90	53.8	0.4	23	31	3	6	2
VAN00W-147	---	---	90	54.2	1.1	21	30	0	4	2
VA97W-375RS	90	91	89	52.3	1.6	20	27	0	5	2
VA97W-375WS**	---	90	89	53.3	0.5	19	27	0	2	2
VA00W-130	---	---	89	53.1	0.2	21	28	3	8	3
PIONEER 26R24(B)	90	90	89	53.2	1.9	20	30	3	8	2
ROANE(B)	81	83	88	56.0	0.2	23	30	5	6	1
VAN98W-342	---	---	88	52.6	0.2	20	27	0	6	1
VA99W-278	---	---	88	52.2	0.4	22	31	0	8	3
WPB Y93-998B	---	---	88	55.6	0.2	21	30	1	8	1

Table 9. Summary of performance of entries in the Virginia Tech No-Till Wheat Test at Warsaw, 2000, 2001, and 2002 harvests, continued.*

Line	Average Yield (Bu/a) 3-year	2-year	1-year	Test Wt. (Lb/bu)	Lodging (0.2-10)	Date Headed (Mar31+)	Ht. (In)	Powdery Mildew (0-9)	Leaf Rust (0-9)	Freeze Damage (1-5)
SS 535(R)	88	90	87	54.7	0.4	22	30	2	7	3
SS EXP564(R)	---	---	86	52.8	0.5	22	31	6	6	2
VA98W-631	---	---	85	51.4	0.3	23	29	5	2	3
PIONEER 2580(B)	85	86	83	52.0	0.2	19	30	1	8	3
AGRIPRO M94*1549-1	---	---	83	54.6	2.6	17	30	3	4	2
MD11-52(R)	---	---	82	53.3	0.2	19	27	0	6	2
CENTURY II(D)	84	84	81	53.6	1.1	20	30	3	4	4
VA00W-38	---	---	80	53.2	4.0	20	28	2	5	3
USG 3209(RT)	88	88	80	52.7	1.2	20	27	4	5	4
VA98W-749	82	82	79	51.7	0.6	21	30	0	1	1
VA00W-459	---	---	78	53.4	0.4	19	28	1	4	3
VA00W-464	---	---	78	53.3	0.3	20	28	0	3	3
VA00W-562	---	---	78	55.7	2.1	22	32	4	5	1
GA92485E15(RT)	---	---	78	55.0	1.2	20	31	3	2	4
SS 566(R)	78	80	78	53.1	0.2	24	33	5	2	3
NEUSE	---	79	77	53.8	0.2	23	31	0	2	2
PIONEER 2684(B)	83	83	77	55.4	0.2	18	29	2	6	3
PIONEER XW00J	---	---	77	55.1	0.8	23	30	4	6	2
COKER 9184(D)	---	80	76	55.2	0.2	23	30	5	3	2
SS 518(R)	80	83	76	52.3	4.4	20	28	0	3	4
COKER B950943	---	---	75	51.5	0.4	21	31	6	1	3
VAN00W-44	---	---	74	54.2	0.4	19	27	3	1	4
VA00W-194	---	---	74	52.4	0.5	21	30	5	3	3
VA99W-200	---	82	73	54.5	0.5	18	31	6	4	4
VA99W-188	---	---	73	54.7	0.2	18	27	3	4	4
FEATHERSTONE 520(B)	81	83	73	53.1	1.4	21	28	3	7	4
AGS2000(TV)	78	79	73	54.0	3.2	17	29	3	4	4
VA00W-381	---	---	72	53.7	0.2	18	29	1	8	3
KY90C-292-4-1	---	78	72	52.9	0.2	22	30	6	9	2
COKER 9025(D)	79	81	71	52.9	1.8	24	30	6	3	2
COKER 9663(D)	79	79	70	52.5	1.9	20	33	6	2	2
PIONEER 26R46(B)	76	75	70	54.1	1.2	21	30	2	7	3
PIONEER 26R38(B)	80	80	70	51.3	1.1	21	32	1	5	4
KY90C-054-6	---	---	68	53.4	0.2	24	33	7	6	3
VA00W-337	---	---	67	51.2	0.2	21	27	2	2	5
PAT(R)	---	72	66	54.3	0.2	26	34	7	7	2
PIONEER 26R61(B)	75	75	65	55.6	0.2	21	31	2	3	4
MASSEY	73	71	58	51.0	6.5	20	31	1	8	4
VAN00W-187	---	---	53	51.4	0.2	18	30	7	2	5
Location Average	85	85	82	53.6	1.1	21	30	3	5	24
LSD (0.05)	6	6						---		---
C.V.	7	7	8	1.8	112.0	5	4	---	35	---

* Varieties are ordered by descending one-year yield averages. The year 2000 had only 2 replications; 2001 and 2002 had 4 replications. Data other than yield is given for 2002 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.

The freeze damage ratings 1-5 are 1=no damage and 5=all early tillers killed.

EVALUATION OF FUNGICIDE/VARIETY INTERACTIONS

Genetic yield potential is certainly one of the keys to variety success. In all 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 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. This made a difference at least at Painter where the untreated plots were near the woods and had greater spring freeze injury. One should not assume that the addition of Tilt and Gaucho is the only reason SS 550 yielded 117 Bu/A in the fungicide and Gaucho plots and only 100 Bu/A with no fungicide – no Gaucho. Location of the plots in the field also affected results.

Table 10. Yield performance (bushels/acre) of entries in the Virginia Tech Wheat Test, 2002 harvest, fungicide versus no fungicide.*

	Fungicide						No Fungicide					
Line	Painter		Warsaw		Average		Painter		Warsaw		Average	
VA00W-130	112	+	123	+	118	+	82		107	+	95	+
SS 550(R)	113	+	119	+	117	+	87		112	+	100	+
SISSON	113	+	118	+	116	+	89	+	110	+	100	+
VA98W-335	112	+	121	+	116	+	92	+	107	+	100	+
VA97W-375RS	116	+	113		115	+	92	+	115	+	104	+
SS 560(R)	107	+	122	+	115	+	85		110	+	98	+
VA97W-375WS**	110	+	118	+	114	+	95	+	114	+	104	+
VA97W-24	103		130	+	114	+	87		117	+	102	+
TRIBUTE	110	+	118	+	114	+	96	+	107	+	102	+
PIONEER 26R24(B)	100		116	+	112	+	84		105	+	95	+
SS 520(R)	104		121	+	112	+	96	+	111	+	105	+
VA99W-131	99		122	+	111	+	77		107	+	95	+
VA99W-278	104		117	+	111	+	84		105	+	94	+
VA00W-526	104		117	+	111	+	96	+	113	+	105	+
MD11-52(R)	109	+	113		111	+	90	+	108	+	99	+
VA98W-631	103		114		109	+	91	+	104		99	+
USG 3209(RT)	105		112		109	+	86		104		95	+
VAN98W-342	102		115		108		85		104		96	+
VAN00W-147	109	+	106		108		85		102		94	+
VA00W-464	107	+	109		108		84		104		94	+
VA99W-176	99		113		107		90	+	109	+	100	+
PIONEER 2684(B)	103		111		107		91	+	95		93	
McCORMICK	101		111		106		91	+	105	+	98	+
VA98W-706	103		109		106		87		102		95	+
COKER B950943	101		110		106		87		94		90	
KY90C-054-6	110		101		105		76		96		86	
PIONEER 2580(B)	98		112		105		91	+	105	+	98	+
SS 535(R)	98		112		105		84		99		92	
VA98W-749	101		108		104		91	+	105	+	98	+
VA99W-419	101		108		104		81		97		89	

Table 10. Yield performance (bushels/acre) of entries in the Virginia Tech Wheat Test, 2002 harvest, fungicide versus no fungicide, continued.*

Line	Fungicide			No Fungicide		
	Painter	Warsaw	Average	Painter	Warsaw	Average
WPB Y93-998B	100	106	103	78	103	91
VA98W-590	100	105	102	84	98	92
USG 3650 (RT)	99	105	102	84	99	92
AGRIPRO M94*1549-1	96	108	102	74	102	88
CENTURY II(D)	95	107	101	69	98	84
SS EXP564(R)	92	110	101	75	94	85
VA99W-461	91	109	100	69	95	84
COKER 9184(D)	96	104	100	73	94	84
PIONEER XW00J	91	108	100	74	95	90
VA00W-381	93	104	99	80	91 -	86
VA00W-459	90	108	99	80	102	91
SS 566(R)	90	107	99	73	93	83
FEATHERSTONE 520	98	99	98	80	96	88
VA00W-194	96	97	97	69	88 -	79 -
NEUSE	96	98	97	77	91 -	84
AGS2000(TV)	90	104	97	67 -	98	83
KY90C-292-4-1	90	99	95	66 -	93	82 -
VA00W-337	93	94 -	94	72	87 -	80 -
GA92485E15(RT)	88	98	93 -	67 -	93	80 -
JACKSON(B)	84 -	98	91 -	74	96	85
VA00W-38	83 -	95 -	89 -	68 -	89 -	81 -
COKER 9663(D)	80 -	98	89 -	61 -	90 -	76 -
VA99W-188	83 -	92 -	88 -	65 -	82 -	74 -
PIONEER 26R38(B)	76 -	99	88 -	71	95	83
ROANE(B)	79 -	95 -	87 -	60 -	93	76 -
COKER 9025(D)	82 -	91 -	87 -	69	85 -	77 -
PIONEER 26R61(B)	84 -	89 -	87 -	60 -	87 -	74 -
SS 518(R)	80 -	93 -	86 -	63 -	93	78 -
VA99W-200	76 -	94 -	85 -	55 -	81 -	68 -
VA00W-562	79 -	91 -	85 -	72	90 -	81 -
PIONEER 26R46(B)	81 -	88 -	85 -	52 -	81 -	67 -
MASSEY	82 -	86 -	84 -	72	79 -	76 -
VAN00W-44	81 -	85 -	83 -	69	81 -	75 -
VAN00W-187	74 -	85 -	80 -	51 -	73 -	62 -
PAT(R)	73 -	87 -	80 -	61 -	78 -	70 -
Average	96	106	101	78	98	88
LSD (0.05)	11	10	8	10	7	6
C.V.	7	6	6	7	4	6

* Varieties are ordered by descending statewide treated yield averages.
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 line having white seed color.

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, Massey, and Roane to have reduced scab infection compared to Pioneer Brand 26R38, Pioneer Brand 26R46, SS 535, and SS 560. Further research will hopefully identify more high yielding lines such as McCormick and Tribute that have significantly lower scab infection.

Table 11. Reaction of Entries in the Virginia State Wheat Test to Fusarium Head Blight, 2002 harvest.

	Inoculated Scab Nursery, Blacksburg, VA[1]				Non-inoculated No-Till Test, Warsaw, VA[2]		
Line	Scab Incidence[3] (%) (3)	Scab Severity[4] (%) (3)	Scab Index[5] (3)	% Scabby Seeds[6] (1)	Scab Incidence[3] (%) (4)	Scab Severity[4] (%) (4)	Scab Index[5] (4)
VAN98W-342	15.0	11.0	1.67	10.5	13.8	23.0	3.25
WPB Y93-998B	25.0	11.7	3.00	9.0	11.3	22.8	2.75
VA99W-200	30.7	11.0	4.00	3.5	22.5	21.3	5.25
VAN00W-44	43.3	9.3	4.33	9.0	15.0	23.8	3.25
McCORMICK	45.0	10.0	4.67	5.5	4.8	19.0	1.00
TRIBUTE	40.0	11.7	4.67	8.5	8.8	22.0	2.00
VA00W-562	41.7	11.3	4.67	16.0	7.5	23.0	1.75
VA99W-188	36.7	12.7	5.00	9.5	12.5	25.5	2.75
MASSEY	51.7	11.7	6.00	11.5	11.3	22.8	2.75
USG 3650	56.7	10.7	6.00	19.5	7.3	21.5	1.75
KY90C-292-4-1	50.0	13.0	6.67	13.5	13.8	23.5	3.50
VA98W-335	50.0	11.3	7.00	6.0	18.8	24.0	5.25
SS 520(R)	43.3	15.3	7.00	11.0	15.0	22.3	3.50
VA99W-461	68.3	10.3	7.33	12.0	6.5	21.8	1.50
VA00W-38	56.7	11.7	7.33	7.0	15.0	16.8	2.50
JACKSON(B)	53.3	14.7	7.67	13.0	18.8	25.5	4.50
VA98W-706	58.3	12.3	7.67	4.0	12.5	26.3	3.25
VAN00W-187	55.0	15.0	7.67	3.5	15.0	20.8	3.25
SS EXP564(R)	48.3	16.3	7.67	11.0	6.3	21.3	1.25
PIONEER 2684(B)	46.7	18.0	8.00	10.5	15.0	24.5	3.50
ROANE(B)	58.3	13.3	8.33	9.5	5.0	17.8	0.75
SS 518(R)	51.7	16.0	8.33	13.0	18.8	20.8	3.75
SS 566(R)	65.0	13.0	8.67	13.5	5.0	25.8	1.25
VA98W-749	61.7	12.7	9.00	3.0	21.3	23.3	5.50
VA00W-459	51.7	18.3	9.00	16.5	28.8	21.8	6.00
GA92485E15(RT)	53.3	17.0	9.00	17.5	20.0	21.8	4.75
PIONEER 26R24(B)	56.7	17.0	9.00	15.5	21.3	24.3	5.00
VA98W-590	48.3	17.7	9.33	5.0	5.5	20.5	1.25
VAN00W-147	65.0	14.0	9.33	13.5	15.0	24.3	3.75
NEUSE(R)	66.7	13.3	9.33	9.5	8.8	22.8	2.00
VA00W-526	63.3	14.0	9.67	6.0	12.5	20.3	2.50
SISSON	71.7	13.7	10.00	12.5	33.8	25.8	8.75
CENTURY II(D)	60.0	16.0	10.00	6.0	31.3	25.5	8.00
KY90C-054-6	75.0	13.3	10.00	11.5	6.3	19.3	1.50
AGRIPRO M94*1549	71.7	14.0	10.00	4.5	5.3	20.8	1.00

Table 11. Reaction of Entries in the Virginia State Wheat Test to Fusarium Head Blight, 2002 harvest, continued.

	Inoculated Scab Nursery, Blacksburg, VA[1]				Non-Inoculated No-Till Test, Warsaw, VA[2]		
Line	Scab Incidence[3] (%) (3)[7]	Scab Severity[4] (%) (3)	Scab Index[5] (3)	% Scabby Seeds[6] (1)	Scab Incidence[3] (%) (4)	Scab Severity[4] (%) (4)	Scab Index[5] (4)
VA97W-375RS	73.3	14.7	10.33	6.0	25.0	25.8	6.75
VA97W-24	76.7	13.7	10.33	15.0	11.3	18.8	2.00
SS 550(R)	68.3	15.0	11.00	9.0	22.5	18.8	4.00
VA99W-278	68.3	16.0	11.33	16.0	23.8	21.3	4.75
PIONEER 2580(B)	61.7	17.7	11.33	19.5	15.0	27.8	4.25
FEATHERSTONE 520	71.7	16.0	11.67	17.5	23.8	26.3	6.25
COKER 9025(D)	76.7	15.3	11.67	11.5	10.3	21.5	2.50
USG 3209(RT)	75.0	16.3	12.00	13.0	20.0	24.5	4.75
COKER 9184(D)	65.0	18.3	12.00	10.0	13.8	21.8	3.00
VA99W-176	66.7	17.7	12.33	20.0	18.8	25.8	5.00
VA00W-381	80.0	15.7	12.33	4.0	23.8	22.0	5.50
VA99W-419	63.3	20.0	13.33	21.0	31.3	23.0	7.25
MD11-52(R)	71.7	17.7	14.00	12.5	28.8	27.3	8.00
COKER 9663(D)	78.3	17.7	14.00	21.0	21.3	27.8	5.75
PIONEER 26R46(B)	73.3	19.3	14.00	22.0	27.5	24.8	7.00
VA00W-464	80.0	18.7	15.00	15.0	13.8	18.3	2.25
PIONEER XW00J	71.7	18.3	15.00	19.5	12.5	24.5	3.50
PAT(R)	81.7	18.3	15.33	17.5	2.3	18.8	0.50
AGS2000(TV)	83.3	18.3	15.33	21.5	30.0	22.3	7.25
VA00W-130	71.7	19.3	15.67	7.5	18.8	21.8	4.00
COKER B950943	78.3	20.7	15.67	18.0	21.3	26.8	5.50
VA99W-131	83.3	19.7	16.67	28.0	12.0	23.3	2.75
VA00W-194	86.7	20.3	17.67	22.5	17.5	22.8	4.00
SS 560(R)	65.0	26.7	19.00	11.0	8.8	19.0	1.75
PIONEER 26R38(B)	93.3	22.0	20.00	10.0	27.5	26.8	7.00
PIONEER 26R61(B)	85.0	24.0	20.33	11.5	25.0	25.8	7.00
SS 535(R)	78.3	25.3	20.33	17.0	10.8	21.8	2.50
VA98W-631	90.0	23.3	21.00	15.0	23.8	29.0	7.75
VA97W-375WS	75.0	26.7	22.00	4.5	25.0	26.5	7.00
VA00W-337	85.0	26.3	23.33	17.5	30.0	23.8	7.00
GRAND MEAN	63.3	16.2	10.94	12.38	16.7	23.0	4.01
CV	25.4	34.9	55.05		36.1	24.4	50.69
LSD	21.8	7.6	8.15		7.0	6.6	2.38

[1] Entries were planted in 20 ft^2 plots and were inoculated at the booting stage with scab-colonized maize seed.

[2] Entries were planted no-till following maize in 117 ft^2 plots, and did not receive any artificial scab inoculum.

[3] Scab Incidence (%): Percentage of infected spikes among 50 (Blacksburg) and 100 (Warsaw) randomly selected spikes.

[4] Scab Severity (%): Percentage of infected florets divided by total number of florets on the infected spikes.

[5] Scab Index: Scab incidence x scab severity x 100; an overall indicator of scab resistance/susceptibility level.

[6] % Scabby Seeds: Percent of visibly scabby seeds from a 200-kernel sample.

[7] The number in parentheses below column headings indicates the number of replications upon which data are based.

MILLING AND BAKING QUALITY

Milling and baking quality of wheat lines grown in the 2000-2001 Virginia State Wheat Test were assessed by the USDA-ARS Soft Wheat Quality Laboratory (SWQL) in Wooster, Ohio (Table 12). Quality evaluations were conducted using 500 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 can vary 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 Pioneer Brand 26R24. On the basis of five independent quality evaluations conducted by the SWQL, Pioneer 26R24 ranked 336 out of 633 cultivars for milling quality and has average milling qualities. Pioneer 26R24 has stronger than average gluten strength and pastry baking quality is below average. Lines receiving milling and baking scores of "A" have average (numeric score = 100) or better than average (scores > 100) quality compared with Pioneer 26R24. Because Pioneer 26R24 is rather lenient as a quality standard, wheat lines scoring "C" or lower for milling or baking quality may have questionable quality for pastry products. For comparison, Pioneer Brand 26R46 has excellent milling and pastry baking quality and ranks 2nd out of 633 cultivars evaluated by the SWQL.

Milling quality scores ranged from a high of 105.6 to a low of 86.5 with 14 lines having better milling quality than Pioneer 26R24 (score of 100). Flour yields ranged from a high of 75.5% to a low of 70.2% compared to 72.3% for Pioneer 26R24. Baking quality scores ranged from a high of 108.2 to a low of 79.0 with 25 lines having better baking quality than Pioneer 26R24 (score of 100). Cookie diameter ranged from a high of 18.96 cm to a low of 17.21 cm compared to 17.79 cm for Pioneer 26R24.

Flour protein concentration varied from 6.64 to 8.32%. Protein quality, specifically gluten strength, based on Lactic Acid Solvent Retention Capacity varied from a high of 126 to a low of 86. Lines having lower Lactic Acid scores likely would produce a dough having weak gluten strength and more suitable for pastry products, while lines having higher Lactic Acid scores would produce a dough having stronger gluten strength and more suitable for cracker or certain bread products.

Table 12. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluations of the 2001 harvest.

Line	Milling Quality Score		Baking Quality Score		Micro Test Weight Lb/bu		Softness Equivalent %		Flour Yield %	Flour Protein %	Micro A.W.R.C. %	Cookie Diameter cm	Lactic Acid Retention
PIONEER 26R24 (STANDARD)	100.0	A	100.0	A	62.5		56.7		72.3	7.79	58.9	17.79	114.3
CENTURY II(D)	105.6	A	100.5	A	63.2		57.1		73.7	7.88	59.6	17.87	102.6
COKER 9835(DA)	104.6	A	105.5	A	62.9		59.4		73.1	7.29	59.7	18.49	95.7
VA96-54-326	104.3	A	106.0	A	63.1		55.2		73.8	8.23	56.8	18.08	122.2
AGS2000	104.1	A	105.8	A	63.0		55.0		74.7	7.64	56.9	18.85	105.0
PIONEER XW692	103.4	A	104.9	A	63.0		54.0		73.7	7.70	55.1	18.53	99.1
VA97W-414	102.9	A	104.9	A	63.1		54.0		73.5	7.89	57.9	18.16	126.1
PIONEER 26R46(B)	102.7	A	104.4	A	61.8		53.5	*	75.5	7.29	54.2	18.96	113.4
FFR 555W(B)	102.5	A	105.7	A	62.0		54.8		73.4	7.70	55.1	18.72	104.1
VA97W-24	102.4	A	104.0	A	62.0		53.1	*	73.7	7.78	57.2	18.20	86.0
VA98W-706	102.4	A	103.5	A	62.5		52.6	*	74.2	8.26	55.5	18.28	116.0
VA96W-158	102.4	A	106.0	A	60.0	Q	55.1		73.5	7.83	56.7	18.32	118.3
PIONEER XW586	102.1	A	108.2	A	61.5		57.4		72.9	6.95	57.0	18.23	116.7
FEATHERSTONE 520(B)	101.5	A	104.8	A	63.8		55.1		72.9	7.77	58.3	18.41	116.3
VA99W-200	101.5	A	107.7	A	62.3		56.9		72.7	7.54	57.8	18.78	111.4
JACKSON(B)	100.8	A	107.5	A	62.3		59.6		72.1	7.95	58.9	18.25	122.6

Table 12. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluations of the 2001 harvest, continued.

Line	Milling Quality Score		Baking Quality Score		Micro Test Weight Lb/bu		Softness Equivalent %		Flour Yield %		Flour Protein %		Micro A.W.R.C. %		Cookie Diameter cm		Lactic Acid Retention
PIONEER 26R24 (STANDARD)	100.0	A	100.0	A	62.5		56.7		72.3		7.79		58.9		17.79		114.3
MASSEY	100.1	A	105.2	A	62.8		54.3		72.7		8.18		56.9		18.17		116.5
PIONEER 26R24(B)	100.0	A	100.1	A	62.5		56.7		72.3		7.79		58.9		17.79		114.4
PIONEER 2643(B)	99.3	B	106.6	A	62.4		55.8		72.3		7.72		56.7		18.53		126.4
VA99W-176	99.1	B	98.1	B	62.7		52.1	*	72.9		7.73		59.9		18.52		115.2
PEARL	97.8	B	102.9	A	62.2		54.2		72.2		7.41		58.8		18.59		114.3
PIONEER 2684(B)	97.0	B	104.3	A	63.2		53.5	*	72.0		8.32		55.7		18.40		104.1
AgriPro Dawson	96.4	B	88.4	D	63.0		54.5		71.7		7.43		59.1		17.36	*	112.9
SISSON	96.1	B	80.7	E	62.8		50.9	*	72.3		7.56		60.6	*	17.34	*	91.8
PIONEER 26R38(B)	96.1	B	100.2	A	62.8		49.3	Q	72.6		8.32		56.8		18.38		93.9
VA98W-590	95.6	B	88.6	D	63.9		53.7		71.6		7.88		60.7	*	17.60		115.6
McCORMICK	95.4	B	92.0	C	64.0		54.1		71.4	*	7.55		60.4		17.71		117.2
VA97W-375RS	95.4	B	101.8	A	62.5		51.5	*	72.0		8.04		58.1		18.24		96.1
ROANE(B)	95.1	B	102.6	A	63.4		58.2		70.7	Q	7.33		60.5		18.31		110.8
VA97W-206	94.5	C	105.4	A	61.5		55.1		71.3	*	7.65		58.1		18.41		88.3
FFR 535(RT)	94.1	C	104.2	A	63.7		53.3	*	71.3	*	7.30		57.7		18.88		115.0
VA96W-247	94.1	C	97.6	B	62.8		53.2	*	71.4	*	6.64		60.5		18.28		102.9
VA97W-375WS	93.5	C	93.9	C	61.8		50.5	Q	71.8		8.14		59.4		17.85		93.1
VA98W-749	93.4	C	101.6	A	62.6		55.5		70.8	*	8.05		59.8		18.06		102.6
PIONEER 26R61(B)	92.3	C	94.2	C	64.5		48.3	Q	71.6	*	8.28		57.0		17.79		106.4
COKER 9663(DA)	91.9	C	96.0	B	62.3		51.4	*	71.2	*	7.37		57.6		17.73		111.4
PIONEER 2580(B)	91.9	C	103.2	A	61.0	*	53.7		70.9	*	7.29		57.2		17.96		109.7
TRIBUTE	91.4	C	79.0	F	65.0		49.1	Q	71.1	*	7.20		64.2	Q	17.77		119.2
FFR 518(RT)	90.8	C	105.0	A	61.2	*	54.2		70.5	Q	7.95		55.0		18.03		110.0
FFR 36803	88.9	D	79.5	F	61.1	*	51.7	*	70.5	Q	7.06		60.3		17.21	Q	126.4
USG 3209	86.5	D	85.3	D	63.5		48.2	Q	70.2	Q	7.38		63.3	Q	18.00		111.1

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 (21ºF) of March 23rd at Warsaw 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. Early plant height numbers in Table 8 were taken on March 8, 2002 at Warsaw. 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 20-25ºF 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 as shown by intermediate plant heights in Table 8.

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.

TRITICALE VARIETIES

Table 13. Summary of performance of entries in the Virginia Tech Triticale Test, 2002 harvest.

Line	Yield (Bu/acre)	Test Weight (Lb/bu)	Lodging (0.2-10)	Height (inches)	Heading Date (Mar31+)	Early Height (inches)
	(6)	(5)	(4)	(4)	(4)	(1)
RSI 331	94	49.6	0.4	38	21	8.4
TRICAL 336	87	48.8	1.3	46	25	5.5
RSI 301	85	49.1	0.2	36	20	8.3
Arcia	80	49.9	3.2	43	18	7.3
USG 3209*	74	54.0	2.7	30	23	6.0
Average	84	50.3	1.6	38	22	7.1
LSD (0.05)	4	0.4	0.8	1	0	1.0
C.V.	8	1.2	68.7	5	3	9.2

*** Wheat line used for comparison.**

Table 14. Yield performance (bushels/acre) of entries in the Virginia Tech Triticale Test, 2002 harvest.

Line	Holland	Painter	Warsaw	Blackstone	Blacksburg	Orange	Average
RSI 331	93	98	117	85	89	83	94
TRICAL 336	74	98	104	69	86	90	87
RSI 301	84	87	110	78	74	79	85
Arcia	76	92	96	72	67	80	80
USG 3209*	82	73	91	49	63	87	74
Average	82	89	103	70	76	84	84
LSD (0.05)	10	7	8	12	10	13	4
C.V.	8	5	5	11	8	10	8

*** Wheat line used for comparison.**

Table 15. Two-year yield performance (bushels/acre) of entries in the Virginia Tech Triticale Test, 2001 and 2002 harvests.

Line	Holland	Painter	Warsaw	Blackstone	Blacksburg	Orange	Average
RSI 331	83	98	113	84	92	84	92
RSI 301	74	89	110	80	82	80	85
USG 3209*	77	81	89	60	72	87	77
Average	78	89	104	75	82	83	85
LSD (0.05)	5	7	8	7	7	16	3
C.V.	6	6	6	8	7	13	8

*** Wheat line used for comparison.**