Virginia Cooperative Extension
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Small Grains in 2018

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Recommended Small Grain Varieties

The following are the small grain variety recommendations for Virginia in 2018. The recommendations are based on the agronomic performance in wheat and barley variety tests conducted by the Research and Extension Divisions of Virginia Tech in the various agricultural regions of the state. All varieties listed have produced excellent yield compared to others of similar maturity.

Recommended Wheat Varieties Arranged in Order of Maturity

Cultivar	Test Weight	Fusarium Head Blight Resistance	Powdery Mildew Resistance	Leaf Rust Resistance	Stripe Rust Resistance	Leaf Blotch Resistance	Barley Yellow Dwarf Virus Tolerance	Milling Quality Grade (A - F)	SRW Baking Quality Grade (A - F)
Early Heading Varieties (117 - 118 d, Julian)									
PGX 16-7	Very Good	Moderate	Excellent	Good	Excellent	Very Good	Very Good	D	D
MAS 61	Moderate	Very Good	Moderate	Very Good	Good	Very Good	Very Good	C	D
SY Viper	Excellent	Moderate	Very Good	Poor	Excellent	Good	Good	D	F
AgriMAXX 474	Poor	Moderate	Very Good	Poor	Excellent	Moderate	Good	A	F
Dyna-Gro 9811	Very Good	Good	Excellent	Excellent	Excellent	Very Good	Good	C	D
Mid-Season Heading Varieties (119 - 120 d, Julian)									
Pioneer Brand 26R59	Good	Moderate	Excellent	Poor	Excellent	Moderate	Moderate	B	D
Hilliard	Very Good	Very Good	Excellent	Very Good	Excellent	Very Good	Very Good	C	D
AgriMAXX 415	Excellent	Very Good	Moderate	Good	Very Good	Good	Good	B	C
USG 3895	Moderate	Moderate	Poor	Very Good	Excellent	Very Good	Excellent	A	D
Shirley	Poor	Moderate	Excellent	Excellent	Poor	Very Good	Very Good	B	D
CROPLAN 8550	Good	Good	Excellent	Excellent	Excellent	Good	Very Good	A	D
Pioneer Brand 26R41	Moderate	Good	Very Good	Good	Excellent	Moderate	Good	B	D
Full-Season Heading Varieties (121 d, Julian)									
#Bullet	Good	Good	Excellent	Very Good	Excellent	Very Good	Good	A	F
L11550	Excellent	Good	Good	Excellent	Excellent	Very Good	Good	C	D
Pioneer 26R10	Good	Good	Moderate	Poor	Excellent	Good	Good	B	D
MBX 14S-210	Good	Very Good	Moderate	Excellent	Good	Good	Very Good	B	F
MAS 7	Very Good	Good	Very Good	Poor	Very Good	Good	Good	C	D
AgriMAXX 446	Good	Moderate	Moderate	Poor	Excellent	Poor	Good	A	D
USG 3404	Moderate	Very Good	Moderate	Poor	Excellent	Good	Very Good	A	F
AgriMAXX 444	Moderate	Very Good	Moderate	Poor	Excellent	Good	Very Good	A	D

Recommended Barley Varieties

	Hulled Barley				Hulless Barley
	Nomini*	Thoroughbred	Atlantic	Secretariat	Amaze 10
Adapted Regions					
Coastal Plain		X	X	X	X
Piedmont, South of James River		X	X	X	X
Piedmont, North of James River		X	X	X	X
West of Blue Ridge	X	X	X	X	X
Agronomic Characteristics					
Yield	3	1	1	1	1
Test Weight	1	2	2	2	3
Lodging Tolerance	Very	Good	Good	Good	Fair
Relative Height	2	2	3	3	2
Relative Heading	Avg	Late	Early	Avg	Avg

1 - Significantly greater than average
2 - Average or greater than average
3 - Average or less than average
4 - Significantly less than average

*Nomini barley has low test weight. It is not recommended in eastern Virginia because low test weight grain is unsuitable for export or domestic non-ruminant feed markets.

Barley and Wheat Entries

Commercial Barley Entries

Limagrain Cereal Seed (LCS), 7707 Jackson Pond Dr, Charlotte, NC 28273 – Calypso and Violetta.
Virginia Tech and Virginia Crop Improvement Association (VT and VCIA), 9142 Atlee Station Road, Mechanicsville, VA 23116 – Amaze 10, Atlantic, Barsoy, Callao, Dan, Doyce, Eve, Nomini, Price, Secretariat, Thoroughbred, and Wysor.

Commercial and Experimental Wheat Entries

AgriMAXX Wheat Company (AgriMAXX), 7167 Highbanks Road, Mascoutah, IL 62258 – 415, 444, 446, 463, 473, 474, 480, 485, 486, Exp 1874, and Exp 1892.
Armor Seed, LLC (Armor), 183 Pennsylvania Avenue, Waldenburg, AR 72475 – Mayhem, Nemesis, Riptide, ARW1716, ARW1719, ARW1762, and ARW1766.
Crop Production Services (Dyna-Gro), 15277 Richmond-Tappahannock Highway, St Stephens Church, VA 23148 - 9522, 9600, 9701, 9750, 9772, 9862, Shirley, 9811, and WX17775.
Dupont Pioneer (Pioneer), 425 Abbeydale Way, Columbia, SC 29229 - 26R10, 26R36, 26R41, 26R45, and 26R59.
Eddie Mercer Agri-Services (Mercer Brand), Inc, 6900 Linganore Road, Frederick, MD 21702 – MBX 14-S-210, MBX 18-A-237, MBX 17-P-275, and MBX 17-M-245.
Erwin-Keith, Inc. (Progeny), 1529 Highway 193, Wynne, AR 72396 – #Boss, #Bullet, #Turbo, #Warrior, PGX16-3, PGX 16-7, and PGX 17-16.
Featherstone Farm Seed (Featherstone), 13941 Genito Road, Amelia, VA 23002 – Featherstone 73.
University of Georgia (UGA), 1109 Experiment Street, Griffin, GA 30223 – GA061471-15LE38 and GA08535-15LE29.
Limagrain Cereal Seeds (LCS), 7099 Parkbrook Lane, Cordova, TN 38018 - L11551, L11719, L11550 and LCS Ammo.
University of Maryland (UMD), 1116 Research Greenhouse Complex, University of Maryland, College Park, MD 20742 –15MDX5, 15MDX18, 15MDX20, and Luisa.
Meherrin Ag & Chemical (Southern Harvest), 413 Main Street, Severn, NC 27877 – SH 4300, SH 4400, SH 7200, and SH 7510.
Mid Atlantic Seeds (Mid-Atlantic), 316 N. Albemarle Street #6, York, PA 17403 –MAS #7, MAS #61, MAS #65, MAS #116, MAS #316, MAS #83, MAS #84, MAS #85, MAS #86, and MAS #87.
NC State University (NCSU), 840 Method Road Unit 3, Raleigh, NC 27695 – NC13-20076, NC13-21213, and NC14-23372.
Syngenta Seeds, Inc. (Agri-Pro), 806 N. 2nd St, Berthoud, CO 80513 – SY 547, SY Miskin, and SY Viper.
Tidewater Seed LLC (Tidewater), 29000 Information Lane Suite 302, Easton, MD 21601 – TWS2616, TWS2818, and TWS3418.
UniSouth Genetics (USG), 3205 C Highway 46S, Dickson, TN 37055 – 3118, 3197, 3228, 3316, 3329, 3404, 3429, 3458, 3536, and 3895.
Virginia Tech and Virginia Crop Improvement Association (VT and VCIA), 9142 Atlee Station Road, Mechanicsville, VA 23111 – Massey and all lines prefixed by VA and DH.
Winfield United (CROPLAN), 1080 County Road F West, MS 5850, Shoreview, MN 55126-2910 – SRW 8415, SRW 8550, SRW 9415, and SRW 9606.

Appreciation is expressed to the Virginia Small Grains Check-Off Board, AgriMAXX, Armor Seed LLC, Crop Production Services, Dupont Pioneer, Eddie Mercer Agri-Services, Inc., Erwin-Keith, Inc., Featherstone Farm Seed, Inc., Limagrain Cereal Seeds, Meherrin Ag & Chemical, Mid-Atlantic Seeds, Syngenta Seeds, Inc., Tidewater Seed LLC, UniSouth Genetics, Inc., Winfield United, 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. Wade Thomason, Extension Agronomist, Grains; Dr. Carl Griffey, Small Grains Breeder; Mr. Harry Behl, Agricultural Supervisor; Ms.

Elizabeth Rucker, Research Associate: Dr. Bee Khim Chim, Post-Doctoral Assistant. Location Supervisors: Mr. Tom Custis (Painter); Dr. David Langston and Mr. Karl Jones (Holland); Mr. Robert Pitman, Dr. Joseph Oakes and Mr. Mark Vaughn, (Warsaw); Mr. Ned Jones (Blackstone); Dr. Carl Griffey, Mr. Wynse Brooks, Mr. Jon Light (Blacksburg); Mr. Doug Horn (Shenandoah Valley); Mr. Brad Lael (Orange).

Introduction

The following tables present results from barley and wheat varietal tests conducted in Virginia in 2016-2018. Small-grain cultivar performance tests are conducted each year in Virginia by the Virginia Tech Department of Crop and Soil Environmental Sciences and the Virginia Agricultural Experiment Station. The tests provide information to assist Virginia Cooperative Extension Service agents in formulating cultivar recommendations for small grain producers and to companies developing cultivars and/or marketing seed within the state. Yield data are given for individual locations and across locations and years; yield and other performance characteristics are averaged over the number of locations indicated in parenthesis near the column heading. Performance of a given variety often varies widely over locations and years which makes multiple location-year averages a more reliable indication of expected performance than data from a single year or location. Details about management practices for barley and wheat are listed for each experimental location.

The Season - 2018

Statewide temperatures and rainfall in fall 2017 were generally favorable for wheat seeding after fields dried from the soaking from Hurricane Matthew. By mid-October, wheat planting reached 20% of intentions, compared with a five year average of 25% by this date. Continued favorable weather allowed 41% and 72% of the wheat and barley crops, respectively to be planted by October 3. By mid-November, planting progress was near the five year average for all small grains reported with 53 and 60% of barley and wheat acres reported as good or excellent. Dry conditions persisted through late November results in a decline in the number of wheat and barley acres rated excellent, though this did allow successful late seeding in some areas. Rainfall in early December returned the total season precipitation to near normal, followed by mild and wet conditions through much of January. February was unseasonably warm with limited rainfall, resulting in soil moisture depletion. Barley and wheat rated were rated good or excellent on 46 and 68% of acres, respectively. March brought mostly mild temperatures with a freeze mid-month. Seventy-five % of the winter wheat crop was rated good or excellent for the week ending March 26. Statewide rains were received in mid-March, but season total rainfall continued below normal. By the end of the third week of March, 33% of the wheat crop was reported as headed, up 14% from last year and 23% from the five-year average. Dry soil conditions continued through mid-April with temperature above average through the last half of the month. At the end of April, 75% of the winter wheat crop was still rated good or excellent. Precipitation varied statewide in the first two weeks of May, with 74% of the wheat crop headed, compared with 85% in 2017, but exactly the same as the five year average for this date. Most areas received significant rainfall in the last half of May resulting in a decline in small grain crop quality and increased risk of Fusarium head blight. On June 17, 43% of barley for grain was harvested as was 30% of winter wheat. Heavy rains continued in many areas in mid-late June. Fifty-three percent of wheat was harvested by June 24, 10% behind 2017 but 7% ahead of the five-year average for this date. On July 1, 73% of the wheat crop was harvested with many producers reporting slightly lower yields and poor test weights. The USDA NASS reports that Virginia

farmers will harvest 11 million acres of wheat from 175,000 acres in 2018, up 15% from 2017. A yield of 63 bu/ac is expected, down 3 bushels from 2017.

Figure 1. 2017-18 and 30-yr mean cumulative growing season precipitation for Virginia.

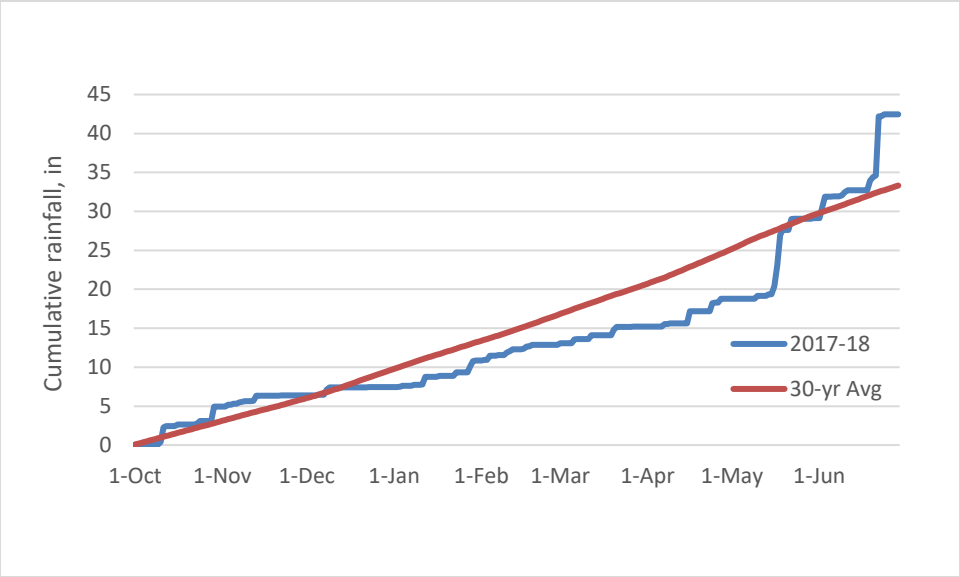
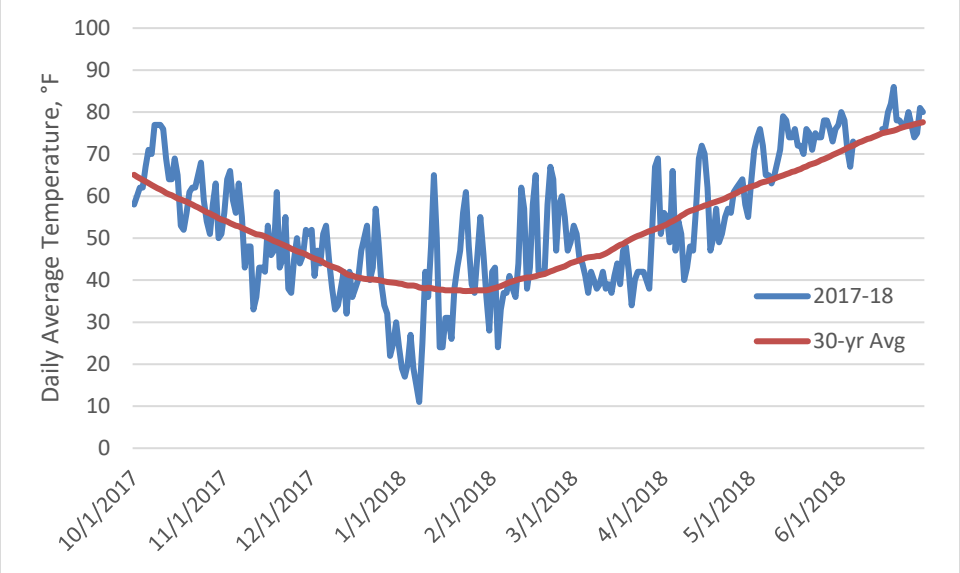


Figure 2. Growing season daily average temperature, 2017-18 and 30-yr mean.



Section 1: Barley Varieties

The Virginia Tech barley-breeding program is the largest and, until recently, was the only remaining public program in the eastern United States. Our program is significantly diverse with breeding efforts focused on development of superior, widely adapted, high-yielding winter barley cultivars and a major focus on incorporation of value-added traits geared toward development of new markets. As a result, nine winter feed barley (5-hulled and 4-hulless) were released from the program since 1990. Meanwhile, due to the continued decline in price and production of feed barley, and increasing interest from local and regional maltsters and brewers, the Virginia Tech breeding program has shifted emphasis of the barley program to rapid development of adapted winter malting barley varieties. This goal is being accomplished via development and testing of doubled haploid (DH) lines, and the formation of a collaborative Eastern Malt Barley Trial (EMBT) in which elite lines will be evaluated in neighboring states including North Carolina and Kentucky to facilitate collaborations and enhance variety development. As interest grows in this nursery the number of cooperators will likely expand to include additional nursery in other eastern states. In addition, our program is collaborating with barley breeders in twenty three states and also with breeders in Europe on winter malt barley research. It is anticipated that several potential winter malt barley releases will be grown and tested in pilot evaluation nurseries and breeder seed developed in 2018-2019. As such, our most important work will continue to be associated with malting barley varietal development. Development of improved variety is a cooperative effort between breeding programs and the end users (malting and brewing industry). End-users dictate goals of the breeding program. Contributions are through the direct testing of germplasm, research to help improve our understanding of the genetics of quality, and screening of FHB/DON resistance lines.

Meanwhile, we have continued to make progress improving resistance to FHB (Fusarium Head Blight). We are using marker assisted selection (MAS) to incorporate unique FHB resistant Quantitative Trait Loci (QTL) into our high yielding barley varieties and breeding lines. A resistance QTL associated with scab severity, DON toxin and Fusarium Damaged kernel (FDK) was recently identified in one of our hulless barley varieties, Eve. We are also using Double Haploid (DH) breeding method in collaboration with Oregon State University. This will reduce our breeding cycle by at least 3-4 years and could have a dramatic impact on breeding progress.

As interest continues to grow in locally produced ingredients from the craft brewing industry in the mid-Atlantic and eastern U.S. finding malted barley is not easy for those located east of the Mississippi river. This has triggered significant demand for malt barley. We are trying to bridge this gap by evaluating malt barley cultivars developed by collaborators in the U.S and Europe while rapidly developing and testing our own malt barley experimental lines. Locally produced malting barley is good for Virginia's economy and farmers can earn a $3 to $4 premium for growing malting barley. Virginia currently grows around 45,000 acres of feed barley annually which could be converted to the production of malting barley as well as fostering an expansion in total barley acreage. Winter grown malt barley is more sustainable since it is grown from October to June, providing farmers the added double crop opportunities with soybeans in the summer. According to the Brewers Association, Virginia's 124 craft breweries currently produce over 274,000 barrels of craft beer annually and have an economic impact of over a million dollars.
Our main effort is breeding winter Malt barley cultivars that have superior malt

quality and are well adapted to the mid-Atlantic and southeastern United States. We have a graduate student, Nicholas Meier, developing molecular markers for malting quality traits to help us select superior quality malting lines with more precision and eliminate costly testing expenses. Nick is also working on flavor analysis of commonly grown cultivars to determine how malt flavor is affected by genetics and environment. We anticipate that interest in production of malt barley will continue to grow in this region and we plan to release varieties to meet diverse market demands. Our future allotment of resources will continue to provide more resources to our winter malt barley as the industry continues to grow.

Hulless Barley

Hulless barley tests were planted in seven-inch rows at Blackstone, Orange, Holland, and Painter. They were planted in six-inch rows at Warsaw and Blacksburg. The no-till site at Holland was planted at 66 seeds per square foot. All other locations were planted at 60 seeds per square foot.

In the 2018 harvest year, grain yield for Doyce hulless barley in Virginia was 68 bushels per acre with test weight of 47.8 pounds per bushel. Average grain yield of Eve was 73 bushels per acre with test weight of 54.2 pounds per bushel. Average grain yield of Amaze 10 was 72 bushels per acre with a test weight of 52.5 pounds per bushel. Dan had the highest average grain yield (74 bushels per acre) among released cultivars (Eve, Amaze 10 and Doyce). It produced a test weight of 53.9 pounds/bushel that was similar to Eve (54.2 pounds/bushel) and 6.1 pounds per bushel higher than Doyce (47.8 pounds/bushel). The 2-row experimental line VA16H-27 (2R) had the highest overall average grain yield (85 bushels per acre) that was 11 bushels per acre higher than that of Dan, 12 bushels per acre higher than Eve (73 bushels per acre), 13 bushels per acre higher than Amaze 10 (72 bushels/acre), 17 bushels per acre higher than Doyce, and 9 bushels per acre more than the test average.

Hulled Barley

Hulled barley tests were planted in seven-inch rows at Blackstone, Orange, Holland, and Painter. They were planted in six-inch rows at Warsaw and Blacksburg. The no-till site at Holland was planted at 48 seeds per square foot. All other locations were planted at 44 seeds per square foot.

In the 2018 harvest year, the overall grain yield of Thoroughbred was 86 bushels per acre with an average test weight of 43.2 pounds per bushel compared to the mean yield of 87 bushels per acre and a test weight of 45.4 pounds per bushel for the mean of all cultivars tested. Average grain yield of Secretariat (90 bushels per acre) was 2 bushels per acre higher than Atlantic (88 bushels per acre), 4 bushels per acre higher than Thoroughbred, 5 bushels per acre higher than Price, 17 bushels per acre higher than Nomini and 18 bushels per acre higher than Callao. However, the experimental line VA16B-217 (LA) had the highest average overall grain yield (100 bushel per acre) that was 10 bushel per acre higher than Secretariat, 14 bushel per acre more than Thoroughbred and 13 bushel per acre higher than the overall test mean. In addition, two other experimental lines (VA16B-236 LA and VA16B-263 LA) ranked 2nd and 3rd respectively in average grain yield (98 bushels per acre) that were 8 bushels per acre higher than that of Secretariat and 12 bushels per acre higher than Thoroughbred.

Malt Barley

Malt barley tests were planted in seven-inch rows at Blackstone and in six-inch rows at Warsaw and Blacksburg; at 44 seeds per square foot.

In the 2018 harvest year, average grain yield of Virginia malt experimental line VA16M-84 (2R) (92 Bu/ac) was similar to Flavia, 1 bushel per acre less than Calypso (93 Bu/ac), 2 bushel per acre higher than Violetta (90 Bu/ac) and significantly higher than Thoroughbred (79 Bu/ac). VA16M-84 also had test weight (49.4 Lb/bu) that was 7 pounds heavier than Calypso, Flavia and Thoroughbred (42.9, 42.9 and 42.0 Lb/bu) respectively in test weight, 5 pounds more than Violetta (44.7 Lb/bu) and 4 pounds heavier than overall test average (45.7 Lb/bu). Two other Virginia malt barley DH lines VA16M-14DH12-85 and VA16M-14DH12-69 had average grain yield 91 and 90 Bu/ac respectively that were similar to Violetta, 2 to 3 bushels per acre lower than Calypso and Flavia, and significantly higher than Thoroughbred. These new malt barley results are encouraging and indicate that significant progress is being made by the breeding program in developing barley cultivars with high yield and improved disease resistance.

Summary of barley management practices for the 2018 harvest season (All rates are given on a per acre basis.)

Blacksburg - Planted October 2, 2017. Pre-plant fertilizer was 47-120-150-10(S)-3(B). Site was sprayed with .75 oz. Harmony Extra SG® on November 17, 2017. Site was fertilized with 40 units UAN 30-0-0 and treated with 0.6 oz. Harmony Extra SG® on April 6, 2018. Harvest occurred June 11-15, 2018.

Blackstone - Planted October 19, 2017. Pre-plant fertilizer was 300 lb. 10-10-10 on October 17, 2017. Site received 60 lb. N + 0.5 oz. Harmony Extra XP® February 28, 2018. Site was fertilized with 40 lb. N using UAN on April 23, 2018. Harvest occurred June 5, 2018.

Painter - Planted November 16, 2017. Pre-plant fertilizer was 60 lb. N using 30% on November 15, 2017. Application of .75 oz. Harmony Extra SG® was on April 2, 2018. Site was fertilized with 90 lb. N using 30% UAN April 2, 2018. Harvest occurred June 18, 2018.

Warsaw - Planted October 22, 2017. Pre-plant fertilizer was 30-80-80-5 applied October 19, 2017. Site was fertilized using 12-0-0-1.5 at 30 lb. on December 7, 2017. Site was also fertilized using 24-0-0-3 at 50 lb. on March 19, 2018. Harmony Extra SG® was applied at .75 oz. with surfactant at 2 qt. /100 gal water on February 28, 2018. Site was treated with 1 qt. Boron on March 27, 2018. Harvest occurred June 6, 2018.

Holland - Planted conventional-till October 25, 2017. Pre-plant fertilizer was 345 lb. 10-17-29 on October 17, 2017. Site was fertilized with 60 units N using 24-0-0-3 on February 5, 2018 and again with 50 units N using 24-0-0-3 on April 2, 2018. Site was treated with 16.4 oz. Axel XL® on March 18, 2018. Site was treated with 4 oz. Folicur® on April 26, 2018. Harvest occurred June 6, 2018.

Orange - Planted October 18, 2017. Pre-plant fertilizer was 30-60-0 October 5, 2017. Sixty lb. N plus .6 oz. Harmony Extra SG® was applied March 5, 2018. Harvest occurred June 15-19, 2018.

Table 1. Summary of performance of entries in the Virginia Tech Hulless Barley Test, 2018 harvest.

Hulless Lines	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	Leaf Rust (0-9)	Net Blotch (0-9)	FHB Index (0-100)
	(5)	(6)	(2)	(3)	(6)	(1)	(1)	(1)	(1)
VA16H-27 2R	85.4 +	53.0	123 +	38	4	0	4	2 -	28
VA15H-73 2R	82.8 +	54.4 +	121	38	2 -	0	4	3	16 -
VA16H-28 2R	82.2 +	53.4	123 +	38	4	0	5 +	2	31
VA16H-26 2R	82.0 +	53.2	123 +	37	4	0	4	3	32
VA16H-24 2R	81.6 +	53.7	123 +	38	4	0	5	2 -	23 -
VA15H-79 WS	81.0 +	53.8	118 -	38	4	0	3 -	2	65
VA06H-79	79.9	52.9	119 -	38	4	0	6 +	4	68
VA14H-33	79.5	54.9 +	118 -	37	3 -	0	3	2 -	52
VA16H-25 2R	78.7	54.4 +	120 -	38	5	0	3	2	27
VA16H-160	78.6	53.4	119 -	36	4	1	3	3	67
VA15H-9	77.9	53.0	119 -	37	4	1	2 -	4	57
VA16H-159	77.1	52.8	121 +	34 -	4	1	4	3	47
VA15H-11	76.7	53.9	119 -	38	5	0	2 -	2 -	37
VA16H-276 Seg.	76.0	53.0	121	36	2 -	0	4	3	82 +
VA06H-25	75.2	52.5 -	122 +	38	5	1	4	6 +	64
VA15H-12	74.6	54.1 +	119 -	37	5 +	0	2 -	2	38
Dan	74.3	53.9	119 -	37	4	0	5 +	4	61
VA15H-119 WS	73.7	53.8	121 +	39 +	4	0	4	3	63
VA16H-89	73.1	54.4 +	122 +	38	4	3 +	4	3	65
VA07H-35 WS	72.9	52.5 -	122 +	36	5 +	2 +	3	5 +	68
Eve	72.9	54.2 +	114 -	35 -	5	1	4	5 +	59
VA15H-118 WS	72.7	54.0 +	121 +	38	5	1	3	3	60
VA15H-90 WS	72.6	55.0 +	119 -	38	4	0	4	3	50
Amaze 10	72.2	52.5 -	121 +	37	5	2	3	6 +	71
VA08H-79 WS	72.1	51.0 -	121 +	36	5	0	8 +	4	70
VA16H-218 WS	71.9	53.2	122 +	37	4	1	3	4	70
VA16H-247	71.6 -	53.6	120	35 -	5	1	3	4	74
VA16H-158	71.3 -	53.2	123 +	35 -	5	0	5	2 -	71
VA14H-58	70.9 -	54.7 +	120 -	37	6 +	0	2 -	5 +	58
Doyce	67.5 -	47.8 -	119 -	37	6 +	1	3	5 +	68
Average	76.0	53.3	120	37	4	0	4	3	55
LSD (0.05)	4.2	0.6	1	2	1	1	1	1	28
C.V.	8.7	2.1	1	5	40	171	22	25	37

Released cultivars are shown in bold print. The number in parentheses below column headings indicates the number of locations on which data are based.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 2. Two-year average summary of performance of entries in the Virginia Tech Hulless Barley Tests, 2017 and 2018 harvests.

Hulless Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Leaf Rust (0-9)		Net Blotch (0-9)		Powdery Mildew (0-9)	
	(9)		(10)		(4)		(6)		(11)		(4)		(3)		(2)	
VA14H-33	78.2	+	55.3	+	111	-	34		3	-	4	-	4	-	1	
VA15H-73 2R	77.6	+	55.2	+	114	+	35		2	-	5		5		0	
VA15H-11	76.9	+	54.8	+	112		35		4		3	-	4	-	1	
VA15H-79 WS	76.8	+	54.1		111	-	35		3		3	-	4	-	0	
VA15H-9	75.9	+	53.8		113		35		3		3	-	5		3	
VA14H-58	75.4		55.6	+	112		35		5	+	4	-	5		1	
VA15H-12	75.3		55.1	+	112	-	35		4		3	-	4	-	1	
VA06H-79	74.1		53.5	-	113		34		4		7	+	4	-	1	
VA15H-118 WS	73.0		55.2	+	114	+	36	+	4		4		4		2	
VA15H-119 WS	73.0		54.9	+	114	+	36	+	4		4		5		0	
VA15H-90 WS	72.9		56.0	+	112		35		4		4		5		1	
VA07H-35 WS	70.2		53.6	-	114	+	34		5	+	4		5		3	
VA06H-25	70.1		53.5	-	114	+	35		4		4		5		2	
Amaze 10	67.8	-	53.6	-	114	+	35		4		5		5		2	
Eve	67.0	-	54.8	+	107	-	33	-	4		4		7	+	1	
VA08H-79 WS	66.2	-	52.2	-	115	+	34		4		8	+	4		6	+
Doyce	61.0	-	48.7	-	111	-	34	-	5	+	5		7	+	1	
Average	72.4		54.1		112		35		4		4		5		1	
LSD (0.05)	3.2		0.5		0		1		1		1		1		2	
C.V.	9.5		2.1		1		5		40		19		17		111	

Released cultivars are shown in bold print.

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

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 3. Three-year average summary of performance of entries in the Virginia Tech Hulless Barley Tests, 2016, 2017, and 2018 harvests.

Hulless Lines	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Leaf Rust (0-9)	Net Blotch (0-9)	Powdery Mildew (0-9)	BYD Virus[1] (0-9)	Winter Survival (%)
	(13)	(14)	(6)	(8)	(14)	(5)	(6)	(4)	(1)	(1)
VA14H-33	72.9 +	55.7 +	111 -	34	3 -	3 -	4 -	1 -	0	91
VA14H-58	72.6 +	55.9 +	112	34	4	4 -	4	2	1	95
VA06H-79	69.5 +	53.8	113 +	33	3 -	8 +	3 -	0 -	0	94
VA07H-35 WS	66.6	54.3	114 +	33	4	4 -	5	4 +	2	94
VA06H-25	66.4	54.1	114 +	34	4	4 -	5	3	2	94
Amaze 10	65.0	54.4	114 +	34	4	5	5	4 +	2	95
VA08H-79 WS	62.0 -	52.9 -	115 +	33	4	8 +	3 -	7 +	0	98 +
Eve	60.2 -	55.0 +	107 -	32 -	4	4 -	7 +	1 -	0	90 -
Doyce	57.9 -	49.6 -	110 -	33	4 +	5	7 +	1 -	0	95
Average	65.9	54.0	112	33	4	5	5	3	1	94
LSD (0.05)	2.7	0.5	0	1	1	1	1	1	2	3
C.V.	10.5	2.4	1	5	42	18	23	45	185	2

Released cultivars are shown in bold print.

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

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

[1] BYD = Barley Yellow Dwarf Virus.

Table 4. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Hulless Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
VA16H-28 2R	---		87.4	+	51.4		4	
VA14H-33	81.9	+	86.6	+	51.9		3	
VA16H-25 2R	---		82.6		54.4	+	5	
Eve	68.9		82.4		52.5		7	
VA16H-160	---		81.9		52.3		3	
VA15H-79 WS	75.8		81.5		50.7		5	
VA15H-73 2R	76.9		81.1		54.2	+	3	
VA15H-119 WS	76.7		81.0		51.4		5	
VA16H-24 2R	---		80.8		51.2		5	
VA06H-79	75.3		80.2		53.3		3	
VA16H-276 Seg.	---		79.7		52.8		2	
VA15H-12	73.8		79.6		52.2		5	
VA16H-159	---		79.5		51.4		3	
VA15H-118 WS	75.1		79.3		50.6		5	
VA06H-25	65.6	-	78.9		49.1		5	
VA15H-9	73.4		78.5		51.7		5	
VA16H-218 WS	---		78.0		49.1		5	
Dan	---		77.9		51.7		5	
VA16H-27 2R	---		77.8		50.0		7	
VA16H-89	---		77.6		51.8		4	
VA16H-247	---		77.3		53.1		5	
VA15H-11	72.7		77.3		51.5		5	
VA07H-35 WS	71.5		77.2		49.4		5	
VA08H-79 WS	69.7		77.0		46.0	-	6	
VA14H-58	75.2		76.8		53.8	+	7	
VA16H-26 2R	---		76.8		51.2		4	
VA15H-90 WS	75.9		76.5		52.6		4	
VA16H-158	---		75.3		48.8		5	
Amaze 10	66.3	-	74.9		49.0		7	
Doyce	64.4	-	74.5		45.1	-	8	+
Average	72.9		79.2		51.1		5	
LSD (0.05)	5.5		7.3		2.5		3	
C.V.	7.6		6.5		3.4		44	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 5. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Tidewater AREC, Holland, VA, 2018 harvest.

Hulless Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
VA15H-79 WS	76.2	+	56.0		2	
VA15H-11	75.6		55.7		3	
Amaze 10	75.6		55.2		3	
VA16H-27 2R	73.9		53.1	-	2	
VA15H-12	73.8		56.5		4	
VA16H-160	73.6		55.7		3	
VA16H-26 2R	73.0		55.0		1	
VA16H-159	72.8		56.1		2	
VA16H-25 2R	72.6		57.1	+	4	+
VA15H-73 2R	72.0		55.0		1	
VA14H-58	71.6		57.1	+	3	
Dan	71.4		55.7		3	
VA15H-118 WS	71.4		56.7		3	
VA16H-276 Seg.	71.3		54.7		1	
VA16H-158	71.2		56.6		2	
VA06H-79	71.1		54.6		2	
VA16H-24 2R	71.0		54.7		1	
VA14H-33	70.9		56.3		2	
VA15H-9	70.3		53.3	-	2	
VA16H-218 WS	70.2		56.0		1	
VA07H-35 WS	69.9		54.9		4	
VA16H-28 2R	69.7		54.3		1	
VA16H-89	69.7		56.6		1	
VA08H-79 WS	69.6		51.6	-	2	
VA15H-119 WS	68.9		56.3		2	
Eve	68.8		57.4	+	4	
VA15H-90 WS	68.8		57.5	+	1	
VA16H-247	68.1		56.0		1	
VA06H-25	67.7		55.4		2	
Doyce	67.1		50.1	-	3	
Average	71.3		55.4		2	
LSD (0.05)	4.6		1.5		1	
C.V.	4.4		1.9		52	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 6. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Eastern Virginia AREC, Warsaw, VA, 2018 harvest.

Hulless Lines	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)	
VA16H-27 2R	---		---		84.8	+	55.9	+	120	+	40		2	
VA16H-26 2R	---		---		82.5	+	55.0		120	+	39		4	
VA16H-28 2R	---		---		81.8	+	55.4		120	+	40		2	
VA15H-73 2R	---		71.2	+	80.9	+	56.6	+	119	+	40	+	3	
VA16H-160	---		---		79.4		54.3		116	-	37	-	3	
VA15H-79 WS	---		71.3	+	78.7		55.9	+	114	-	42	+	2	
VA16H-159	---		---		78.5		53.2	-	118		35	-	4	
VA16H-24 2R	---		---		78.1		55.6		120	+	39		4	
VA15H-12	---		72.1	+	78.0		55.1		115	-	39		5	
VA06H-79	60.7		58.5	-	77.3		52.6	-	116	-	40		3	
VA14H-33	68.1	+	68.8		76.6		56.3	+	113	-	41	+	1	-
VA15H-90 WS	---		69.1		76.3		57.3	+	116	-	40		4	
VA16H-25 2R	---		---		76.3		54.7		116		40	+	6	+
VA16H-158	---		---		76.0		54.5		119	+	38		3	
VA08H-79 WS	48.4	-	50.7	-	75.4		52.5	-	119	+	39		3	
Amaze 10	65.9	+	65.2		75.0		54.6		118	+	40	+	3	
VA16H-276 Seg.	---		---		74.5		52.7	-	117		38		1	-
VA15H-9	---		69.6		74.2		53.8		116	-	37	-	5	
VA06H-25	64.4		63.9		74.0		54.0		118	+	39		6	
VA15H-119 WS	---		69.2		73.2		55.9	+	117		41	+	3	
VA15H-11	---		71.3	+	72.6		54.5		116	-	39		4	
VA16H-218 WS	---		---		71.7		54.5		118	+	38		5	
VA15H-118 WS	---		70.9	+	70.5		55.3		118	+	41	+	4	
VA07H-35 WS	65.3	+	63.7		70.2		54.1		118	+	38		5	
Dan	---		---		68.7		56.6	+	116	-	40		4	
VA16H-247	---		---		67.6	-	53.5	-	117		37	-	4	
VA16H-89	---		---		65.6	-	55.3		119	+	40		4	
VA14H-58	69.3	+	65.0		64.9	-	56.2	+	116	-	37	-	8	+
Eve	54.3	-	55.8	-	61.9	-	55.0		112	-	38		3	
Doyce	52.0	-	47.2	-	61.9	-	49.8	-	115	-	38		8	+
Average	60.9		64.9		74.2		54.7		117		39		4	
LSD (0.05)	3.8		4.7		6.0		1.0		1		1		2	
C.V.	7.6		7.2		5.6		1.3		0		3		42	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 7. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Hulless Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Leaf Rust (0-9)	
VA16H-27 2R	92.5	+	56.2		1	-
VA15H-73 2R	91.4	+	55.4		1	-
VA16H-26 2R	90.2	+	56.1		3	-
VA16H-28 2R	88.0	+	56.3		3	-
VA16H-24 2R	85.6		56.5		3	
VA16H-25 2R	84.2		56.9		5	
VA06H-79	82.1		56.3		4	
VA16H-276 Seg.	79.6		55.5		1	-
VA15H-9	79.0		56.0		7	
VA07H-35 WS	77.7		55.2		8	+
VA16H-89	77.5		57.5	+	5	
VA15H-79 WS	77.4		56.8		4	
VA14H-33	77.3		57.8	+	5	
VA16H-160	76.3		56.3		6	
Eve	75.8		56.8		5	
VA16H-247	75.2		56.1		6	
VA06H-25	74.3		55.4		6	
VA15H-90 WS	71.4		57.6	+	7	
VA08H-79 WS	69.9		54.9	-	6	
Dan	69.9		57.0		4	
VA16H-159	69.5		55.7		5	
VA15H-11	68.9		56.5		8	+
VA16H-218 WS	68.7		55.5		5	
Doyce	67.9		50.5	-	8	+
VA15H-12	63.3		57.3	+	6	
VA14H-58	63.3		57.0	+	8	+
Amaze 10	62.5		56.1		6	
VA16H-158	59.3	-	55.4		6	
VA15H-119 WS	56.9	-	56.5		8	+
VA15H-118 WS	51.6	-	55.7		8	+
Average	74.2		56.1		5	
LSD (0.05)	13.4		0.9		2	
C.V.	12.4		1.2		31	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 8. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Hulless Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Mature Height (In)	Plant Lodging (0-9)	
VA16H-27 2R	---		94.9	+	51.7		36	5	
VA15H-11	83.7	+	93.2		51.2		37	5	
VA15H-119 WS	79.9		93.2		50.9		38	3	
VA16H-24 2R	---		92.6		51.9		39	5	
VA15H-9	81.7		91.2		50.4		36	3	
VA15H-79 WS	75.2		90.1		49.7		35	5	
VA06H-79	82.4	+	89.6		50.4		37	4	
VA16H-26 2R	---		89.3		50.9		34	5	
VA15H-73 2R	78.7		88.6		51.9		36	3	
VA14H-33	79.8		85.6		52.4	+	34	3	
VA15H-118 WS	77.7		85.5		51.7		35	4	
VA16H-159	---		85.0		49.6		32	6	
Dan	---		83.4		51.0		36	4	
VA06H-25	73.4		82.8		50.2		37	3	
VA16H-28 2R	---		80.8		51.5		35	5	
VA16H-160	---		80.7		50.4		36	3	
VA14H-58	82.1		80.6		51.9		35	5	
VA15H-12	73.9		78.3		50.2		36	9	+
VA16H-25 2R	---		77.8		50.3		34	6	
Eve	68.1		75.6		51.1		34	4	
VA16H-89	---		74.9		51.8		38	5	
VA16H-276 Seg.	---		74.8		50.6		33	1	
VA16H-158	---		74.7		51.2		32	6	
Amaze 10	64.7	-	73.2		50.5		34	5	
VA16H-218 WS	---		70.6		51.2		37	6	
VA16H-247	---		70.5		50.8		33	4	
VA15H-90 WS	68.6		70.3		51.5		36	5	
VA07H-35 WS	64.9	-	69.6		50.5		33	6	
VA08H-79 WS	74.2		69.3		49.9		35	4	
Doyce	57.3	-	66.2	-	45.4	-	38	5	
Average	74.5		81.1		50.7		35	4	
LSD (0.05)	7.8		13.3		1.6		4	4	
C.V.	10.3		11.2		2.2		8	59	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 9. Summary of performance of entries in the Virginia Tech Hulless Barley Test, Kentland Farm, Blacksburg, VA, 2018 harvest.

Hulless Lines	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Leaf Rust (0-9)		Net Blotch (0-9)	
VA15H-11	---		85.1	+	74.4	+	54.1	+	122	-	38		3	-	2	-	2	-
VA15H-12	---		85.2	+	69.7	+	53.4	+	122	-	37		4	-	2	-	2	
VA15H-9	---		75.8	+	64.7	+	52.7		123	-	39	+	4	-	2	-	4	
VA16H-28 2R	---		---		60.7	+	51.7		127	+	38		6		5	+	2	
VA16H-25 2R	---		---		58.7		53.2		123		38		6		3		2	
VA16H-27 2R	---		---		57.8		51.1		127	+	37		7		4		2	-
VA16H-276 Seg.	---		---		57.2		51.8		125		35		7	+	4		3	
VA15H-73 2R	---		68.6		56.2		53.3	+	123	-	37		3	-	4		3	
VA15H-119 WS	---		67.6		53.9		52.2		125	+	39		6		4		3	
VA06H-79	67.6	+	68.7		53.7		50.3	-	122	-	37		7	+	6	+	4	
VA14H-58	74.0	+	77.1	+	53.0		52.0		123		38		6		2	-	5	+
VA16H-24 2R	---		---		52.5		52.4		127	+	37		6		5		2	-
VA16H-26 2R	---		---		51.3		50.8		126	+	37		7		4		3	
VA15H-118 WS	---		66.2		50.6		54.1	+	125	+	37		5		3		3	
VA15H-90 WS	---		69.4		50.2		53.7	+	123	-	37		6		4		3	
VA15H-79 WS	---		71.0		49.4		53.7	+	122	-	37		4	-	3	-	2	
VA14H-33	70.2	+	71.5		48.7		54.5	+	123	-	36		5		3		2	-
Eve	56.4		60.6	-	48.0		52.4		117	-	34	-	7		4		5	+
VA16H-160	---		---		47.9		51.8		122	-	35		5		3		3	
VA16H-89	---		---		46.6		53.3	+	125	+	38		7		4		3	
VA16H-247	---		---		46.6		51.9		123		36		7	+	3		4	
VA16H-159	---		---		45.8		51.1		125		35		5		4		3	
VA08H-79 WS	55.5	-	51.1	-	38.7	-	50.9		124		35		8	+	8	+	4	
VA16H-158	---		---		38.3	-	52.8		126	+	34	-	7		5		2	-
Amaze 10	56.2		58.3	-	38.1	-	49.9	-	124		37		7	+	3		6	+
VA16H-218 WS	---		---		37.0	-	52.8		126	+	37		6		3		4	
Dan	---		---		33.4	-	51.2		123	-	35		8	+	5	+	4	
VA07H-35 WS	55.2	-	56.4	-	32.4	-	50.8		125	+	36		7		3		5	+
Doyce	50.2	-	54.2	-	32.0	-	46.1	-	122	-	35		6		3		5	+
VA06H-25	55.4	-	56.3	-	28.0	-	50.7	-	125	+	39		7	+	4		6	+
Average	60.1		67.2		49.2		52.0		124		37		6		4		3	
LSD (0.05)	4.0		6.2		9.8		1.3		1		2		1		1		1	
C.V.	8.2		9.2		14.2		1.7		1		4		15		22		25	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 10. Summary of performance of entries in the Virginia Tech Barley Test, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		Leaf Rust (0-9)		Net Blotch (0-9)		FHB Index (0-100)		Awns[1]
	(6)		(5)		(2)		(3)		(6)		(1)		(1)		(2)		(1)		
VA16B-217 LA	100.2	+	46.7	+	119	+	36		3	-	0		3		2	-	49		LA
VA16B-236 LA	97.9	+	46.2		119	+	37	+	3	-	0		2		2	-	39		LA
VA16B-263 LA	97.9	+	45.9		120	+	35		3	-	0		3		2		65		LA
VA16B-254 LA	97.5	+	46.0		120	+	36		3	-	0		3		2	-	39		LA
VA14B-78	97.3	+	46.3		115	-	34		6		0		2		2		49		SA
VA13B-25 LA	96.6	+	46.4		115	-	34		4	-	0		3		2		40		LA
VA16B-213 LA	95.3	+	46.5	+	119	+	36		4	-	0		2		2		40		LA
VA16B-244 LA	95.3	+	46.4		119	+	36		4		0		2		2		42		LA
VA14B-63	94.6	+	45.6		119	+	33		6		0		2		2	-	71		SA
VA16B-203 LA	94.2	+	45.9		119	+	34		4	-	0		2		2	-	45		LA
VA16B-108	92.9	+	45.3		117		34		4	-	0		2		2		50		SA
VA16B-264 LA	92.7	+	47.1	+	116	-	36		3	-	0		2		2	-	45		LA
VA14B-74	92.2	+	44.8		119	+	36		5		0		3		1	-	73		SA
VA16B-238 LA	91.7		46.3		119	+	35		4	-	0		3		2	-	48		LA
VA14B-79	91.5		44.9		117		32		6	+	0		2		2		66		SA
VA14B-57	91.0		46.6	+	117		33		6	+	0		3		2	-	73		SA
Secretariat	90.1		46.4		116	-	32	-	6	+	0		1	-	2		43		SA
VA12B-56	90.0		44.8		114	-	33		5		0		3		3		67		SA
VA15B-79	89.6		45.6		117		35		4	-	0		2		2	-	77	+	SA
Calypso	89.5		42.5	-	124	+	32		3	-	0		2	-	2		12	-	LA
VA11B-141 LA	89.0		46.6	+	119	+	36		5		1	+	3		2	-	34		LA
VA14B-59	88.4		44.6		117		32		6	+	0		2		1	-	63		SA
VA16B-34	88.3		46.3		115	-	32	-	6	+	0		3		2		57		SA
VA15B-98 (LA)	88.1		44.2	-	117		32	-	5		1	+	3		5	+	50		LA
VA16B-140	87.7		46.7	+	117		32	-	6		0		2		2		55		SA
Violetta	87.7		46.3		120	+	30	-	3	-	1	+	2		3	+	30	-	LA
Atlantic	87.5		45.3		114	-	33		6		0		4	+	4	+	58		SA
VA15B-33	86.6		46.8	+	118	+	32		5		0		2		2		47		SA
VA16B-133	86.0		45.2		117		34		6	+	0		2		2		48		SA
Thoroughbred	85.8		43.2	-	120	+	34		4	-	0		3		6	+	45		LA
VA16B-3	85.6		43.6	-	116	-	34		6	+	0		2		2	-	52		SA
VA16B-131	85.4		46.6	+	118		32	-	6		0		2		2		64		SA
Price	84.7		45.0		117		33		5		0		4	+	6	+	67		SA
VA14B-75	84.3		44.7		117		33		6	+	0		2		1	-	72		SA
VA14BFHB-83	82.2	-	45.9		118		34		6	+	0		2	-	2		53		SA
VA16B-132	81.6	-	46.2		118		34		6	+	0		2	-	2		53		SA
VA16B-141	79.3	-	46.5	+	116	-	33		6	+	0		2	-	3		59		SA
VA08B-95	79.2	-	44.5		115	-	33		7	+	1	+	2		2		47		SA
VA16B-142	79.1	-	45.2		117		30	-	7	+	0		2		2	-	65		SA
Barsoy	77.6	-	45.6		115	-	34		6	+	0		6	+	5	+	48		LA

Table 10. Summary of performance of entries in the Virginia Tech Barley Test, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	Leaf Rust (0-9)	Net Blotch (0-9)	FHB Index (0-100)	Awns[1]
	(6)	(5)	(2)	(3)	(6)	(1)	(1)	(2)	(1)	
Nomini	72.7 -	43.4 -	115 -	40 +	4	0	4 +	3	N/A	AL
Callao	72.4 -	44.8	114 -	33	8 +	0	4 +	3	66	SA
VA92-42-46	64.2 -	42.3 -	117	39 +	6	0	1 -	7 +	48	AL
Wysor	60.3 -	42.6 -	117	38 +	6 +	0	6 +	5 +	59	AL
Average	87.3	45.4	117	34	5	0	2	2	52.9	
LSD (0.05)	4.8	1.0	1	2	1	0	1	1	22	
C.V.	9.4	3.5	1	8	29	469	27	27	30	

Released cultivars are shown in bold print. The number in parentheses below column headings indicates the number of locations on which data are based.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

[1] LA=long awned, SA=short awned, AL=awnletted or awnless.

Table 11. Two-year average summary of performance of entries in the Virginia Tech Barley Tests, 2017 and 2018 harvests.

Barley Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		Leaf Rust (0-9)		Net Blotch (0-9)	
	(10)		(9)		(4)		(5)		(11)		(2)		(4)		(3)	
VA14B-63	97.9	+	44.5	+	112	+	33		4		1		3	-	2	-
VA14B-79	97.0	+	43.5		110		32		5		0		3	-	3	-
VA14B-78	96.6	+	44.8	+	108	-	34		4		1		4	-	2	-
VA13B-25 LA	96.2	+	44.8	+	108	-	33		4	-	0		4		2	-
VA14B-74	95.5	+	43.6		113	+	35	+	4		0		4	-	2	-
Secretariat	93.7	+	45.0	+	109	-	32	-	5	+	0		1	-	2	-
VA14B-57	93.7	+	45.0	+	110		33		5		0		4		2	-
VA15B-79	93.3	+	44.6	+	110		34		3	-	0		4	-	2	-
VA12B-56	91.0		43.2		107	-	32	-	4		0		6	+	3	
VA14B-59	90.6		43.2		110		32	-	5		0		4	-	1	-
VA11B-141 LA	90.5		45.4	+	112	+	36	+	4	-	0		4		2	-
VA15B-33	90.1		45.6	+	111	+	31	-	3	-	0		4		3	
Thoroughbred	90.0		42.2	-	113	+	34		3	-	3	+	7	+	6	+
VA15B-98 (LA)	89.3		43.1		111	+	32		4		0		7	+	6	+
Atlantic	89.2		43.6		108	-	32	-	5		1		6	+	4	+
VA14B-75	88.7		43.4		111	+	33		5		0		3	-	2	-
VA14BFHB-83	86.5		44.7	+	111	+	34		5	+	0		2	-	2	-
Violetta	86.1		45.3	+	113	+	30	-	3	-	1		3	-	3	
Price	84.6		43.6		109		32		4		0		5	+	6	+
VA08B-95	83.6		43.2		108	-	33		6	+	6	+	3	-	2	-
Barsoy	76.5	-	43.2		108	-	34		5		0		8	+	5	+
Callao	76.3	-	42.7	-	107	-	31	-	7	+	0		6	+	3	
Nomini	73.8	-	41.8	-	108	-	40	+	4	-	0		6	+	2	-
VA92-42-46	66.6	-	41.3	-	110		39	+	5		0		2	-	7	+
Wysor	65.6	-	41.2	-	110		39	+	5	+	0		8	+	4	+
Average	87.3		43.7		110		34		4		0		4		3	
LSD (0.05)	4.5		0.6		1		1		1		1		0		1	
C.V.	11.4		2.8		1		7		33		154		18		24	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

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

[1] BYD = Barley Yellow Dwarf Virus.

Table 12. Three-year average summary of performance of entries in the Virginia Tech Barley Tests, 2016, 2017, and 2018 harvests.

Barley Lines	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	Leaf Rust (0-9)	Net Blotch (0-9)	BYD Virus[1] (0-9)	Winter Survival (%)
	(14)	(13)	(6)	(7)	(15)	(4)	(5)	(6)	(1)	(1)
VA14B-63	96.9 +	44.3 +	112 +	33	4	0	3 -	2 -	0	94
VA14B-79	96.7 +	43.6	110 +	32 -	4	0 -	3 -	3	0	95
VA14B-74	96.0 +	43.7	113 +	34 +	4 -	0 -	3 -	2 -	0	95
VA14B-78	95.0 +	44.6 +	109 -	34	4	0	4 -	3	0	96
VA13B-25 LA	94.2 +	44.9 +	108 -	33	4	0 -	4	2 -	0	98
Secretariat	94.2 +	45.2 +	109 -	31 -	4	0 -	1 -	3 -	0	95
VA14B-57	94.0 +	45.0 +	110 +	33	4	0 -	4	2 -	0	94
VA14B-59	92.4 +	43.3	110 +	32 -	4	0 -	3 -	2 -	0	93 -
VA12B-56	90.9 +	43.2	107 -	31 -	4	0 -	5 +	3 -	0	96
VA14B-75	89.8	43.4	110 +	32	4	0 -	3 -	2 -	0	96
VA11B-141 LA	89.6	45.4 +	112 +	35 +	4 -	0 -	4	3 -	1 +	99
Atlantic	88.7	43.8	108 -	32 -	5	0	6 +	4 +	0	95
Thoroughbred	88.5	42.8 -	113 +	33	3 -	4 +	7 +	6 +	0	99
VA14BFHB-83	87.1	44.7 +	110 +	33	5 +	0 -	2 -	2 -	0	96
VA08B-95	84.6	43.1	108 -	33	5 +	7 +	3 -	3 -	0	96
Violetta	82.6	45.1 +	113 +	28 -	2 -	0	3 -	3	2 +	99
Price	81.6 -	43.9	109 -	32 -	4	0	6 +	6 +	0	95
Callao	77.9 -	43.3	107 -	30 -	6 +	0 -	5 +	3	0	94
Barsoy	75.3 -	43.1	108 -	33	5	0	8 +	4 +	3 +	98
Nomini	73.2 -	41.1 -	108 -	38 +	3 -	0 -	6 +	3	0	98
VA92-42-46	63.8 -	41.3 -	109	38 +	4	0 -	2 -	8 +	0	97
Wysor	63.3 -	40.4 -	110	38 +	5	0 -	7 +	4 +	0	99
Average	86.2	43.6	110	33	4	1	4	3	0	96
LSD (0.05)	3.9	0.6	0	1	1	0	0	1	1	3
C.V.	11.4	3.7	1	6	34	100	19	27	208	3

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

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

[1] BYD = Barley Yellow Dwarf Virus.

Table 13. Summary of performance of entries in the Virginia Tech Barley Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Barley Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
VA16B-217 LA	---		95.4	+	48.8		3	
VA16B-203 LA	---		94.4	+	48.8		4	
VA16B-254 LA	---		94.1	+	48.8		3	
VA16B-236 LA	---		93.6		48.6		3	
VA16B-263 LA	---		93.6		49.2		2	
VA16B-238 LA	---		93.0		49.6		4	
VA14B-79	94.9	+	92.8		48.8		6	
VA16B-264 LA	---		92.1		50.4		4	
Atlantic	90.5		90.4		49.6		4	
VA14B-63	94.1	+	90.2		48.9		4	
VA14B-74	91.9		89.7		48.7		4	
VA14B-78	90.5		89.5		49.6		5	
VA13B-25 LA	88.5		89.3		46.8		4	
VA16B-132	---		89.0		49.2		5	
VA12B-56	91.7		88.9		47.1		5	
VA92-42-46	80.8		88.8		47.6		5	
VA15B-79	90.7		88.5		48.8		3	
VA16B-141	---		88.4		49.0		5	
VA16B-133	---		88.3		49.2		4	
Barsoy	85.5		88.2		48.2		5	
Price	85.2		88.2		48.8		3	
VA16B-34	---		88.0		49.0		6	
VA16B-244 LA	---		87.9		49.2		5	
VA16B-131	---		87.8		49.6		5	
VA15B-98 (LA)	91.4		87.6		48.7		4	
Secretariat	91.8		87.1		49.8		5	
VA16B-213 LA	---		87.0		48.9		5	
VA11B-141 LA	88.7		86.8		48.5		4	
VA16B-140	---		86.4		49.2		3	
VA14B-57	89.1		85.6		50.2		5	
Thoroughbred	92.8		85.4		48.5		3	
Violetta	81.9		85.2		48.4		3	
VA15B-33	87.8		84.2		49.5		4	
VA16B-108	---		83.4		48.4		3	
VA16B-3	---		82.9		48.1		4	
VA14BFHB-83	83.9		82.3		47.8		7	+
VA08B-95	78.2	-	81.7		47.9		6	
VA14B-59	83.9		81.1		47.1		6	
Nomini	81.9		80.6		47.4		5	
Calypso	---		80.5	-	41.2	-	3	
VA16B-142	---		80.3	-	46.5		6	

Table 13. Summary of performance of entries in the Virginia Tech Barley Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Barley Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)	Plant Lodging (0-9)	
VA14B-75	86.1		80.3	-	48.2	5	
Wysor	79.0	-	77.7	-	46.6	6	
Callao	74.9	-	76.7	-	46.4	7	+
Average	87.0		87.1		48.4	4	
LSD (0.05)	6.8		6.6		2.1	2	
C.V.	7.8		5.3		3.0	35	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 14. Summary of performance of entries in the Virginia Tech Barley Test, Tidewater AREC, Holland, VA, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
Thoroughbred	87.9	+	46.1		2	
VA16B-263 LA	82.4	+	45.8		3	
VA16B-244 LA	82.2		46.7		4	
VA16B-254 LA	79.3		45.6		2	
VA14B-59	79.2		45.7		4	
VA14B-75	79.1		44.7		3	
VA13B-25 LA	78.9		49.0		5	
VA16B-238 LA	78.6		46.2		4	
Secretariat	78.5		46.9		4	
VA14B-79	78.5		45.3		3	
VA14B-63	78.3		46.9		3	
Calypso	78.3		44.8		2	
VA14B-57	77.9		47.5		4	
VA16B-217 LA	77.8		47.3		3	
VA15B-98 (LA)	77.8		46.2		2	
VA16B-133	77.7		45.4		4	
VA14B-78	77.6		46.8		4	
VA14B-74	77.3		46.2		3	
VA16B-131	76.9		48.1		3	
VA16B-203 LA	76.6		45.9		3	
VA16B-236 LA	76.0		46.9		2	
VA16B-213 LA	75.9		46.6		3	
VA16B-108	75.8		46.7		3	
VA16B-34	75.6		48.3		5	
VA15B-79	75.6		46.1		3	
VA16B-3	75.4		39.5	-	4	
VA08B-95	75.1		45.5		4	
VA16B-142	75.0		47.5		4	
VA11B-141 LA	74.8		48.4		3	
VA14BFHB-83	74.7		47.6		3	
VA16B-132	74.2		47.6		4	
VA12B-56	73.8		46.6		5	
VA15B-33	73.8		46.9		3	
VA16B-141	73.5		48.7		4	
VA16B-140	73.2		48.1		3	
VA16B-264 LA	72.8		46.4		3	
Atlantic	72.5		47.0		3	
Price	71.8		47.5		3	
Callao	71.8		47.1		7	+
Violetta	71.8		47.3		3	
Barsoy	70.7		48.7		7	+

Table 14. Summary of performance of entries in the Virginia Tech Barley Test, Tidewater AREC, Holland, VA, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Plant Lodging (0-9)
Wysor	---	---	3
Nomini	---	---	3
VA92-42-46	---	---	3
Average	76.5	46.6	3
LSD (0.05)	5.8	4.4	2
C.V.	5.3	6.6	35

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

The awnless lines Wysor, Nomini, and VA92-42-46 were selectively grazed by deer.

Table 15. Summary of performance of entries in the Virginia Tech Barley Test, Eastern Virginia AREC, Warsaw, VA, 2018 harvest.

Barley Lines	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)	
VA13B-25 LA	92.7	+	90.9	+	98.9	+	45.7	+	112	-	38		2	-
VA16B-254 LA	---		---		96.8	+	45.4	+	116	+	41	+	4	-
VA16B-213 LA	---		---		96.7	+	45.5	+	116	+	42	+	5	
VA16B-236 LA	---		---		96.6	+	45.6	+	116	+	41	+	4	-
Atlantic	86.5		78.4		95.9	+	44.8		112	-	36		6	
Price	80.8		78.0		93.3		44.8		113	-	36		7	
VA14B-79	98.7	+	92.7	+	92.7		43.8	-	115		36		8	+
VA16B-264 LA	---		---		92.6		46.7	+	113	-	39		2	-
Secretariat	96.1	+	94.4	+	92.5		45.5	+	113	-	35		8	+
Thoroughbred	81.9		75.0	-	92.5		42.9	-	117	+	38		2	-
VA16B-244 LA	---		---		92.5		45.3	+	116	+	40	+	4	-
VA16B-263 LA	---		---		92.3		44.7		117	+	40	+	4	-
VA14B-78	93.2	+	86.6		91.9		45.4	+	112	-	38		7	
VA14B-57	92.6	+	86.8		91.6		45.3	+	114		37		8	+
VA12B-56	84.2		79.4		91.4		44.3		111	-	34	-	5	
VA16B-203 LA	---		---		91.1		45.4	+	116	+	40	+	3	-
VA16B-217 LA	---		---		91.0		45.3	+	116	+	40	+	2	-
VA11B-141 LA	88.3		85.9		91.0		45.9	+	115		42	+	3	-
VA16B-132	---		---		90.8		45.7	+	114		35	-	7	
VA16B-108	---		---		90.5		44.1		115		37		3	-
VA14B-74	98.7	+	94.2	+	89.9		43.8	-	117	+	38		7	+
VA15B-98 (LA)	---		74.5	-	89.7		43.7	-	115		37		3	-
VA16B-238 LA	---		---		89.2		45.0		116	+	40	+	4	-
Calypso	---		---		89.1		42.1	-	121	+	36		0	-
VA14B-63	94.1	+	88.5	+	88.5		44.8		116	+	36		8	+
VA15B-79	---		90.0	+	87.9		44.6		115		37		4	-
VA16B-140	---		---		87.3		45.3	+	115		35	-	7	+
Nomini	74.8	-	70.7	-	86.1		41.2	-	111	-	43	+	5	
VA16B-3	---		---		86.1		44.5		113	-	35	-	9	+
VA16B-141	---		---		85.7		45.6	+	113	-	34	-	9	+
VA14BFHB-83	88.0		83.6		85.6		44.7		115		37		7	+
Violetta	82.1		85.1		85.4		45.7	+	117	+	32	-	1	-
VA16B-34	---		---		85.0		45.2	+	112	-	36		8	+
VA15B-33	---		80.0		84.5		46.5	+	115		35		6	
VA16B-142	---		---		84.4		44.6		114		33	-	9	+
Barsoy	70.0	-	68.9	-	84.4		44.4		112	-	38		5	
VA16B-133	---		---		83.6		44.5		115		35	-	8	+
VA14B-75	86.6		80.3		82.6		43.6	-	115		35	-	9	+
VA08B-95	85.6		79.5		80.8	-	43.5	-	113	-	34	-	9	+
VA14B-59	87.8		79.6		80.3	-	43.5	-	115		34	-	9	+
Callao	76.9	-	69.8	-	79.8	-	45.1		111	-	33	-	8	+

Table 15. Summary of performance of entries in the Virginia Tech Barley Test, Eastern Virginia AREC, Warsaw, VA, 2018 harvest.

Barley Lines	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)	
Wysor	72.6	-	69.6	-	78.4	-	41.5	-	114		40	+	8	+
VA16B-131	---		---		76.3	-	45.5	+	115		35	-	8	+
VA92-42-46	64.8	-	64.8	-	76.0	-	42.5	-	114	-	44	+	6	
Average	85.3		81.1		88.4		44.6		114		37		6	
LSD (0.05)	4.7		5.9		6.1		0.5		1		2		1	
C.V.	6.9		7.3		4.9		0.8		0.5		4		17	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 16. Summary of performance of entries in the Virginia Tech Barley Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
Calypso	126.0	+	44.4		3	-
VA16B-217 LA	124.6	+	48.1	+	2	-
VA15B-33	121.8	+	47.7	+	5	
VA16B-263 LA	121.8	+	46.3		3	-
VA16B-254 LA	120.1	+	46.7	+	5	
Violetta	119.1	+	46.1		4	-
VA16B-108	118.1	+	45.5		5	
VA16B-244 LA	117.0	+	46.9	+	5	
VA16B-203 LA	115.9	+	46.3		5	
VA16B-236 LA	112.0		46.6		4	-
VA13B-25 LA	111.4		47.3	+	5	
VA16B-213 LA	111.3		47.2	+	5	
VA14B-78	107.2		45.8		6	
VA11B-141 LA	107.2		46.9	+	5	
VA16B-238 LA	106.0		47.4	+	5	
VA15B-79	105.5		45.2		4	-
VA16B-264 LA	104.4		47.7	+	5	
VA14B-57	103.5		46.0		8	
VA15B-98 (LA)	102.2		43.7	-	7	
VA12B-56	101.7		43.6	-	7	
Thoroughbred	100.7		41.3	-	5	
VA14B-79	100.1		45.6		8	
VA14B-63	100.1		44.3		8	
VA14B-59	98.4		44.9		7	
Price	94.1		43.7	-	7	
Atlantic	93.3		44.5		7	
VA14B-74	92.9		43.7	-	8	
Nomini	90.2		42.6	-	8	
VA14BFHB-83	88.2		45.5		8	
Barsoy	86.4		45.5		6	
VA16B-140	85.3		46.3		7	
Secretariat	84.8		46.4		8	
VA16B-131	84.8		45.8		8	
VA14B-75	84.0		44.7		8	
VA16B-133	83.9		44.3		7	
VA16B-3	82.9	-	44.2		8	
VA92-42-46	81.8	-	40.6	-	7	
VA16B-132	81.0	-	45.7		9	+
VA16B-34	78.3	-	45.8		8	
VA16B-141	78.1	-	45.5		9	+
Callao	74.8	-	44.0		9	+

Table 16. Summary of performance of entries in the Virginia Tech Barley Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Barley Lines	Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Plant Lodging (0-9)	
VA16B-142	73.8	-	45.4		9	+
VA08B-95	71.1	-	43.7	-	9	+
Wysor	67.1	-	40.3	-	8	
Average	98.0		45.2		6.4	
LSD (0.05)	14.5		1.4		2	
C.V.	9.8		2.3		22	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 17. Summary of performance of entries in the Virginia Tech Barley Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Barley Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Mature Height (In)	Plant Lodging (0-9)		Net Blotch (0-9)	
VA13B-25 LA	102.0	+	111.3	+	36.7		32	5		2	
VA16B-34	---		110.5	+	40.2	+	28	5		2	
VA16B-217 LA	---		108.4	+	36.7		32	6		2	
VA14B-78	97.8	+	106.9	+	38.5		32	4		3	
VA14B-74	91.8		105.8	+	37.0		34	3		1	-
VA16B-264 LA	---		104.7	+	38.4		34	4		1	-
VA16B-213 LA	---		103.8		36.5		29	6		3	
VA16B-236 LA	---		102.0		37.4		32	4		2	
VA14B-63	100.3	+	101.8		38.9		30	7		1	-
VA12B-56	93.8		100.3		36.7		32	2	-	1	-
VA15B-98 (LA)	99.5	+	99.8		37.4		30	6		3	
VA16B-108	---		97.2		35.8		33	4		2	
VA16B-244 LA	---		96.2		35.6		33	7		2	
Secretariat	91.0		95.9		38.2		28	5		2	
VA16B-203 LA	---		94.0		36.7		29	7		2	
VA16B-263 LA	---		93.5		36.4		33	5		3	
VA16B-131	---		92.8		39.9	+	31	6		1	-
Thoroughbred	101.3	+	91.3		35.8		31	5		4	+
VA16B-140	---		90.8		38.4		30	6		2	
VA16B-254 LA	---		90.2		36.0		31	4		2	
VA11B-141 LA	86.5		89.7		37.5		30	7		1	-
Price	85.9		88.9		37.9		33	4		6	+
VA15B-33	92.4		88.6		39.3		32	7		2	
VA16B-133	---		88.3		36.7		33	5		2	
VA15B-79	92.5		88.1		38.5		35	5		1	-
VA14B-59	82.7		83.1		39.8	+	30	6		1	-
VA16B-238 LA	---		81.7		37.4		33	6		3	
Atlantic	89.2		81.4		36.2		31	7		4	+
VA14B-57	90.4		80.2		37.5		31	7		2	
VA14BFHB-83	85.6		79.4		38.3		32	8		2	
Violetta	79.4		79.3		36.6		30	6		3	+
Calypso	---		76.7		35.1	-	29	5		3	
VA08B-95	88.0		74.1		38.8		32	7		1	-
VA14B-79	86.7		73.4		36.1		30	8		2	
VA16B-3	---		70.9		39.0		30	8		1	-
VA16B-132	---		65.9		39.7	+	34	7		2	
VA14B-75	78.6		63.4		37.6		31	8		1	-
Barsoy	67.2	-	59.3	-	36.6		32	9	+	5	+
VA16B-142	---		55.3	-	38.1		29	9		1	-
VA16B-141	---		51.6	-	38.9		31	6		2	
Callao	70.9	-	39.4	-	39.3		35	7		2	

Table 17. Summary of performance of entries in the Virginia Tech Barley Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Barley Lines	2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)	Mature Height (In)		Plant Lodging (0-9)	Net Blotch (0-9)	
Nomini	48.4	-	32.1	-	36.3	38	+	3	2	
VA92-42-46	41.6	-	23.6	-	36.5	37	+	7	7	+
Wysor	40.4	-	20.9	-	36.1	39	+	9	4	+
Average	83.4		82.5		37.5	32		6	2	
LSD (0.05)	11.1		22.1		2.1	5		3	1	
C.V.	12.8		17.5		4.0	11		39	27	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 18. Summary of performance of entries in the Virginia Tech Barley Test, Kentland Farm, Blacksburg,VA, 2018 harvest.

Barley Lines	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Yield (Bu/a @ 48 lb/bu)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Leaf Rust (0-9)	Net Blotch (0-9)
VA14B-75	115.0 +	114.6 +	111.0 +	42.3	119	34	6	2	1 -
VA14B-59	117.8 +	118.0 +	109.3 +	42.1	119	33	5	2	1 -
VA14B-79	118.0 +	120.5 +	108.9 +	41.2 -	119 -	30	7 +	2	3
VA14B-63	115.9 +	117.6 +	108.6 +	43.2	122 +	34	6	2	2
VA14B-78	111.3 +	114.8 +	108.5 +	44 +	118 -	33	7 +	2	2 -
VA14B-57	111.3 +	111.7 +	107.6 +	43.9 +	120	32	6	3	2
VA16B-3	---	---	107.6 +	43	118 -	36	7 +	2	2
VA16B-236 LA	---	---	107.2 +	44.2 +	121 +	37 +	3 -	2	1 -
VA16B-217 LA	---	---	104.2	44.2 +	122 +	36	1 -	3	1 -
VA16B-263 LA	---	---	103.7	43.7 +	122 +	33	2 -	3	1 -
VA16B-140	---	---	103.5	44.5 +	119	31	6	2	2
VA16B-254 LA	---	---	102.9	43.4	123 +	37	3 -	3	2 -
VA16B-238 LA	---	---	102.0	43.4	122 +	34	3 -	3	1 -
Secretariat	111.6 +	109.7 +	101.8	43.3	119 -	32	6	1 -	2 -
VA16B-213 LA	---	---	101.5	44.1 +	122 +	37 +	2 -	2	2 -
VA14B-74	116.9 +	113.7 +	101.4	41.9	122 +	36	5	3	1 -
VA16B-142	---	---	98.5	42	119	30	6	2	3
VA16B-141	---	---	98.2	43.5	119 -	33	6	2 -	4
VA16B-131	---	---	97.8	44 +	120	30 -	7 +	2	3
VA16B-34	---	---	97.7	43.4	117 -	31	7 +	3	3
VA16B-244 LA	---	---	96.0	43.8 +	122 +	35	2 -	2	2 -
VA16B-264 LA	---	---	95.8	44.7 +	119	34	4 -	2	2
VA16B-133	---	---	94.5	42.5	120	35	8 +	2	2
VA16B-203 LA	---	---	92.9	43.3	123 +	35	2 -	2	2 -
Atlantic	103.7	105.4	92.9	41.1 -	116 -	31	8 +	4 +	4 +
VA16B-108	---	---	92.1	42	120	33	4	2	2
VA15B-79	---	102.7	92.0	43.5	120	32	5	2	2
VA13B-25 LA	109.3 +	104.3	91.9	43.3	117 -	33	4	3	2
VA08B-95	103.0	99.2	90.4	42	117 -	34	6	2	3
VA11B-141 LA	104.2	102.5	89.1	43.4	122 +	34	6	3	2
VA16B-132	---	---	88.6	43.2	121	34	6	2 -	2
VA12B-56	106.3	103.0	86.2	42.5	117 -	33	4	3	4 +
Violetta	88.9 -	88.1 -	85.1	43.9 +	123 +	29 -	1 -	2	3
VA14BFHB-83	102.0	98.3	83.8	43.9 +	121	33	6	2 -	2
Callao	95.9	92.1	83.6	41.4 -	117 -	30	9 +	4 +	4
Calypso	---	---	81.5	40.2 -	126 +	32	3 -	2 -	1 -
Nomini	88.0 -	88.0 -	78.7 -	41.4 -	118 -	40 +	3 -	4 +	3
Barsoy	82.5 -	82.5 -	74.1 -	42.1	118 -	32	5	6 +	5 +
Price	84.1 -	90.4 -	70.9 -	41.4 -	120	31	7 +	4 +	6 +
VA15B-98 (LA)	---	93.4	69.6 -	40.2 -	120	28 -	7 +	3	8 +
VA15B-33	---	92.6	66.7 -	43.6 +	121 +	30 -	7 +	2	3

Table 18. Summary of performance of entries in the Virginia Tech Barley Test, Kentland Farm, Blacksburg,VA, 2018 harvest.

Barley Lines	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Yield (Bu/a @ 48 lb/bu)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Leaf Rust (0-9)		Net Blotch (0-9)	
Thoroughbred	91.8	-	87.6	-	61.5	-	37.8	-	123	+	33		7	+	3		9	+
VA92-42-46	72.8	-	72.8	-	60.6	-	41.6	-	121		37	+	6		1	-	6	+
Wysor	70.0	-	70.0	-	59.2	-	40.2	-	120		36		5		6	+	5	+
Average	100.9		99.7		92.3		42.7		120		33		5		2		3	
LSD (0.05)	6.6		8.3		12.1		0.9		1		3		1		1		1	
C.V.	7.7		8.4		9.3		1.6		1		7		20		27		27	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 19. Summary of performance of entries in the Virginia Tech Eastern Malting Barley Test, 2018 harvest.

Barley Lines	Yield (Bu/A)	Moist (%)	Test Weight (Lb/Bu)	Head Date (Julian)	Mature Height (In)	Plant Lodging (0-9)	Leaf Rust (0-9)	Powdery Mildew (0-9)	FHB Index (0-100)	Winter Survival (0-100)
	(3)	(3)	(3)	(2)	(2)	(2)	(1)	(1)	(1)	(1)
VA11B-141 LA	96.3	13.2	45.8	118.5	39.0	2.0	5.0	0.0	68.5	100.0
Calypso (2R)	93.3	12.7	42.9	123.5	33.5	1.0	3.0	0.0	44.5	95.0
KWS Scala (2R)	93.3	12.5	42.6	120.3	29.5	0.7	4.0	0.0	59.0	95.0
Hirondella	93.2	12.9	41.6	122.5	34.0	1.5	3.0	0.0	82.5	95.0
Flavia (2R)	92.7	13.0	42.9	123.7	28.3	0.8	3.0	0.5	52.5	90.0
KWS Joy (2R)	92.6	13.1	41.6	124.0	30.5	1.3	3.0	2.0	55.3	95.0
VA16M-84 (2R)	92.3	13.4	49.4	120.7	37.2	0.5	3.0	2.0	28.8	100.0
VA16M-14DH1285	91.1	13.3	44.7	119.0	38.0	0.8	5.0	1.0	88.0	90.0
SU-Mateo (2R)	90.4	13.3	43.6	123.8	31.7	2.0	4.0	0.0	38.8	100.0
Violetta (2R)	89.7	13.0	44.7	120.7	30.8	0.7	3.0	0.5	46.3	95.0
VA16M-14DH1269	89.7	12.8	46.4	115.8	30.2	1.2	5.0	0.5	82.5	100.0
VA16M-14DH1271	89.3	12.9	44.0	116.3	29.7	0.8	4.0	1.5	80.5	95.0
VA16M-83 (2R)	88.9	13.7	49.2	121.0	37.2	0.5	4.0	1.5	36.0	100.0
ARS15B12 (2R)	88.6	13.6	45.8	119.7	37.0	0.8	4.0	2.0	35.5	95.0
04ARS635-4 (2R)	87.2	13.4	41.2	122.5	29.5	1.2	5.0	2.5	65.3	100.0
ARS14B14 (2R)	87.1	13.2	49.2	119.7	33.3	2.3	6.0	0.0	35.3	70.0
ARS15B30	86.7	13.2	44.6	115.2	30.3	2.8	4.0	0.5	66.5	95.0
LCS Cassanova (2R)	86.1	13.3	45.7	123.8	30.0	1.0	3.0	0.0	45.3	70.0
VA16M-81 (2R)	85.9	13.3	45.9	122.0	34.7	0.8	5.0	2.0	56.5	100.0
ARS15B19 (2R)	85.5	13.9	45.8	120.2	40.0	0.3	3.0	1.5	50.0	95.0
ARS14B12 (2R)	85.3	13.2	48.6	118.8	33.2	1.5	6.0	0.0	41.0	95.0
VA16M-14DH1310	85.0	12.5	48.3	123.2	37.0	1.5	7.0	1.5	82.5	100.0
LCS Nerea (2R)	85.0	13.2	44.6	117.8	29.3	1.0	3.0	0.0	45.8	95.0
ARS15B21	84.4	15.9	45.1	121.7	36.8	0.8	5.0	1.5	64.0	95.0
VA16M-14DH1308	84.1	12.4	45.8	117.3	29.8	0.5	7.0	0.5	83.3	100.0
ARS15B24 (2R)	83.7	13.4	42.6	126.0	29.3	0.3	5.0	3.0	64.5	100.0
ARS15B15 (2R)	83.7	13.7	46.5	119.5	40.2	0.5	3.0	3.0	45.3	95.0
VA16M-14DH13-12 (2R)	83.4	13.3	46.0	120.2	33.2	0.5	6.0	0.0	48.8	80.0
VA16M-14DH1294 (2R)	82.5	13.7	45.1	125.5	41.8	4.5	6.0	0.0	47.5	90.0
ARS15B32 (2R)	81.5	13.5	46.4	119.5	39.3	0.5	4.0	2.5	40.5	95.0
VA16M-115 (2R)	81.4	13.4	48.3	119.8	35.0	2.7	4.0	0.5	62.5	95.0
ARS15B09 (2R)	80.3	13.5	47.5	119.2	35.2	0.2	4.0	0.0	40.5	80.0
ARS15B10 (2R)	80.3	13.4	45.2	119.5	38.8	1.2	4.0	0.0	54.3	90.0
VA16M-82 (2R)	78.8	13.4	49.5	120.2	37.0	3.0	5.0	1.5	25.5	95.0
ARS14B15 (2R)	78.7	13.3	49.2	119.7	32.5	2.5	7.0	0.0	43.8	50.0
Thoroughbred	78.6	13.1	42.0	120.3	33.2	4.5	8.0	2.5	77.8	100.0
VA16M-14DH1272 (2R)	78.5	13.1	49.2	120.5	36.0	3.8	6.0	0.5	64.8	100.0
ARS14B16 (2R)	78.4	13.3	48.3	119.5	31.8	1.5	5.0	0.0	48.5	70.0
VA16M-14DH1283	76.3	11.9	39.9	119.7	36.0	5.5	5.0	0.0	87.0	100.0
VA16B-123 (2R)	74.9	13.3	47.7	119.5	35.0	4.5	5.0	0.5	64.8	100.0
VA16M-118 (2R)	71.7	13.0	46.4	119.3	37.7	4.0	3.0	1.0	54.0	100.0
VA16M-14DH1281 (2R)	71.5	13.2	46.1	119.5	35.3	0.8	5.0	0.5	45.5	95.0
ARS15B06*	60.4	13.3	46.8	116.0	35.7	0.0	5.0	0.0	33.0	10.0
ARS15B34 (2R)*	52.9	13.0	46.2	115.3	34.7	1.0	5.0	0.0	42.8	20.0
ARS15B08 (2R)*	59.7	14.1	46.1	114.7	39.3	0.7	4.0	0.0	18.1	5.0
Average	83.1	13.3	45.7	120.3	34.3	1.6	4.6	0.8	54.8	92.7
LSD (0.05)	6.0	0.8	1.7	0.8	1.7	1.2	---	1.3	27.9	---
C.V.	7.7	6.3	3.8	0.5	4.3	62.9	---	78.4	36.2	---

Released cultivars are shown in bold print. The number in parentheses below column headings indicates the number of locations on which data are based.

Varieties are ordered by descending yield averages.

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

*These 3 lines experienced severe winterkill in Blacksburg lowering their overall yield performance.

Table 20. Summary of performance of entries in the Virginia Tech Eastern Malting Barley Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Barley Lines	Yield (Bu/A)	Moist (%)	Test Weight (Lb/Bu)
ARS15B06	87.3	13.3	49.7
VA16M-83 (2R)	85.0	13.7	50.6
VA16M-84 (2R)	84.3	12.8	51.2
VA16M-14DH1294 (2R)	83.9	13.1	46.7
ARS14B14 (2R)	83.5	12.6	51.7
04ARS635-4 (2R)	82.6	12.8	43.8
VA16M-82 (2R)	82.5	12.8	51.4
VA16M-14DH1285	81.9	12.7	47.8
ARS14B15 (2R)	81.4	12.8	52.3
ARS14B12 (2R)	81.3	12.6	50.8
SU-Mateo (2R)	81.2	12.6	44.4
VA16M-81 (2R)	81.0	12.9	45.0
ARS15B34 (2R)	81.0	12.0	48.4
VA16M-14DH13-12 (2R)	80.9	12.3	47.7
VA11B-141 LA	80.8	12.5	47.9
KWS Joy (2R)	80.8	12.6	42.1
VA16M-14DH1269	80.6	12.0	48.7
ARS14B16 (2R)	80.5	12.7	50.9
ARS15B12 (2R)	80.0	12.6	45.8
VA16M-14DH1271	79.9	12.6	45.5
Thoroughbred	79.9	12.2	46.8
ARS15B10 (2R)	79.8	11.5	46.3
Flavia (2R)	79.8	12.6	42.3
ARS15B15 (2R)	79.5	12.8	46.6
VA16M-115 (2R)	79.5	12.9	50.1
ARS15B24 (2R)	79.5	12.6	46.6
LCS Cassanova (2R)	79.3	13.0	46.6
ARS15B30	79.0	12.5	48.6
VA16M-14DH1272 (2R)	78.5	11.7	50.8
ARS15B09 (2R)	78.4	11.8	47.8
ARS15B19 (2R)	78.0	12.7	44.7
VA16M-14DH1308	77.9	11.1	49.4
ARS15B21	77.2	13.3	46.2
Violetta (2R)	76.9	11.7	43.0
ARS15B32 (2R)	76.8	12.4	46.8
LCS Nerea (2R)	76.3	12.6	44.7
VA16M-14DH1281 (2R)	76.1	12.2	49.1
VA16B-123 (2R)	75.8	12.4	48.7
ARS15B08 (2R)	75.6	13.4	47.0
VA16M-118 (2R)	74.3	11.4	47.8
KWS Scala (2R)	73.0	10.6	41.9
Hirondella	72.3	11.4	42.9
VA16M-14DH1310	71.6	10.7	46.9
Calypso (2R)	68.8	10.5	44.2
VA16M-14DH1283	67.8	8.1	41.1
Average	78.9	12.3	47.1
LSD (0.05)	9.7	2.2	2.9
C.V.	7.6	11.0	5.6

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

Table 21. Summary of performance of entries in the Virginia Tech Eastern Malting Barley Test, Eastern Virginia AREC, Warsaw, VA, 2018 harvest.

Barley Lines	Yield (Bu/A)	Moist (%)	Test Weight (Lb/Bu)	Head Date (Julian)	Mature Height (In)	Plant Lodging (0-9)
KWS Joy (2R)	105.9	13.3	42.9	121.3	30.7	0.0
ARS15B12 (2R)	95.7	14.0	46.1	116.0	36.3	1.0
KWS Scala (2R)	95.0	13.5	42.6	117.3	29.0	0.0
Flavia (2R)	95.0	13.2	43.6	121.3	27.0	0.0
VA11B-141 LA	94.8	13.6	43.6	115.0	40.3	2.0
Calypso (2R)	94.2	13.9	41.9	121.3	34.3	0.0
ARS15B06	93.5	14.8	44.9	116.0	35.7	0.0
Thoroughbred	93.4	13.4	42.6	117.3	34.7	1.7
VA16M-84 (2R)	92.5	13.6	48.2	118.0	38.7	1.0
Hirondella	92.2	14.2	41.9	119.0	32.7	0.3
04ARS635-4 (2R)	90.9	13.4	39.8	118.3	29.3	1.0
VA16M-14DH1285	90.2	13.6	42.0	116.0	39.0	1.0
ARS15B21	90.2	17.8	44.7	118.3	38.7	1.7
LCS Cassanova (2R)	88.5	13.5	46.0	122.3	29.0	0.3
VA16M-83 (2R)	88.4	13.6	47.8	118.0	39.7	1.0
VA16M-14DH1271	88.4	13.0	41.3	113.3	30.7	1.3
ARS15B30	87.1	13.6	43.4	113.3	30.3	1.3
SU-Mateo (2R)	86.8	13.8	43.6	121.0	31.0	0.7
VA16M-14DH1310	85.9	13.1	47.9	120.0	37.7	2.3
VA16M-14DH1308	85.8	13.2	43.5	114.0	30.7	1.0
ARS14B14 (2R)	85.7	13.4	47.4	116.3	34.0	0.7
ARS15B24 (2R)	83.9	14.0	41.6	123.7	28.7	0.0
ARS15B19 (2R)	83.6	13.9	46.0	116.3	39.7	0.7
ARS15B15 (2R)	82.8	14.1	45.8	115.7	39.7	1.0
ARS15B09 (2R)	82.1	13.8	47.1	116.0	36.7	0.3
ARS15B32 (2R)	82.1	13.8	45.5	115.7	39.3	0.7
Violetta (2R)	81.9	13.7	44.8	118.0	30.0	0.0
ARS14B12 (2R)	81.9	13.3	47.3	115.3	34.7	0.7
ARS14B16 (2R)	81.8	13.4	47.2	116.7	32.3	0.0
ARS15B10 (2R)	80.7	14.3	44.4	115.7	39.3	1.7
VA16M-81 (2R)	80.6	13.4	45.4	119.0	36.3	1.0
VA16M-14DH1269	79.9	13.0	44.6	113.0	30.0	2.0
VA16M-14DH1294 (2R)	79.1	14.1	44.9	122.0	42.0	2.3
LCS Nerea (2R)	78.4	13.6	45.0	114.7	27.7	1.0
ARS14B15 (2R)	78.1	13.4	47.8	116.3	34.0	0.7
VA16M-14DH13-12 (2R)	75.7	13.9	43.9	117.0	33.0	1.0
VA16M-115 (2R)	74.7	13.6	46.7	116.7	35.0	2.0
ARS15B08 (2R)	73.1	15.7	45.2	114.7	39.3	0.7
ARS15B34 (2R)	71.5	13.9	44.0	115.3	34.7	1.0
VA16M-82 (2R)	70.0	13.6	47.9	117.0	37.0	3.3
VA16B-123 (2R)	66.6	13.7	46.3	115.7	34.7	4.7
VA16M-14DH1283	65.3	14.0	36.0	116.3	37.0	4.3
VA16M-14DH1272 (2R)	63.3	13.7	48.5	117.0	37.3	4.7
VA16M-118 (2R)	60.6	13.7	44.9	116.0	39.3	5.0
VA16M-14DH1281 (2R)	57.8	13.3	42.1	116.7	37.0	1.3
Average	83.0	13.8	44.6	117.2	34.8	1.3
LSD (0.05)	10.3	0.6	1.2	0.8	2.2	1.5
C.V.	7.6	2.5	1.7	0.4	3.8	69.0

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 22. Summary of performance of entries in the Virginia Tech Eastern Malting Barley Test, Kentland Farm, Blacksburg,VA, 2018 harvest.

Barley Lines	Yield (Bu/A)	Moist (%)	Test Weight (Lb/Bu)	Head Date (Julian)	Mature Height (In)	Plant Lodging (0-9)	Leaf Rust (0-9)	Winter Survival (%)
Calypso (2R)	116.9	13.6	42.9	125.7	32.7	2.0	3.0	95.0
Hirondella	115.0	13.1	40.0	126.0	35.3	2.7	3.0	95.0
VA11B-141 LA	113.2	13.6	45.9	122.0	37.7	2.0	5.0	100.0
KWS Scala (2R)	111.8	13.4	43.3	123.3	30.0	1.3	4.0	95.0
Violetta (2R)	110.4	13.6	46.4	123.3	31.7	1.3	3.0	95.0
VA16M-14DH1269	108.4	13.4	46.0	118.7	30.3	0.3	5.0	100.0
Flavia (2R)	103.5	13.4	42.8	126.0	29.7	1.7	3.0	90.0
SU-Mateo (2R)	103.1	13.6	42.9	126.7	32.3	3.3	4.0	100.0
VA16M-14DH1285	101.1	13.5	44.5	122.0	37.0	0.7	5.0	90.0
LCS Nerea (2R)	100.3	13.5	44.1	121.0	31.0	1.0	3.0	95.0
VA16M-84 (2R)	100.2	13.7	48.8	123.3	35.7	0.0	3.0	100.0
VA16M-14DH1271	99.7	13.2	45.1	119.3	28.7	0.3	4.0	95.0
VA16M-14DH1310	97.6	13.6	50.2	126.3	36.3	0.7	7.0	100.0
VA16M-81 (2R)	96.0	13.6	47.4	125.0	33.0	0.7	5.0	100.0
VA16M-14DH1283	95.9	13.7	43.0	123.0	35.0	6.7	5.0	100.0
ARS15B19 (2R)	95.0	15.0	46.8	124.0	40.3	0.0	3.0	95.0
ARS15B30	93.9	13.4	41.8	117.0	30.3	4.3	4.0	95.0
VA16M-14DH1272 (2R)	93.7	13.8	48.2	124.0	34.7	3.0	6.0	100.0
VA16M-14DH13-12 (2R)	93.6	13.6	46.4	123.3	33.3	0.0	6.0	80.0
VA16M-83 (2R)	93.3	13.7	49.1	124.0	34.7	0.0	4.0	100.0
ARS14B12 (2R)	92.9	13.7	47.6	122.3	31.7	2.3	6.0	95.0
ARS14B14 (2R)	92.1	13.6	48.4	123.0	32.7	4.0	6.0	70.0
KWS Joy (2R)	91.3	13.5	39.8	126.7	30.3	2.7	3.0	95.0
LCS Cassanova (2R)	90.6	13.5	44.3	125.3	31.0	1.7	3.0	70.0
VA16M-115 (2R)	90.1	13.8	48.1	123.0	35.0	3.3	4.0	95.0
ARS15B12 (2R)	90.1	14.2	45.6	123.3	37.7	0.7	4.0	95.0
ARS15B15 (2R)	88.8	14.2	47.0	123.3	40.7	0.0	3.0	95.0
VA16M-14DH1308	88.4	12.9	44.6	120.7	29.0	0.0	7.0	100.0
ARS15B24 (2R)	87.9	13.5	39.6	128.3	30.0	0.7	5.0	100.0
04ARS635-4 (2R)	87.9	14.0	40.1	126.7	29.7	1.3	5.0	100.0
ARS15B21	85.9	16.5	44.6	125.0	35.0	0.0	5.0	95.0
ARS15B32 (2R)	85.7	14.3	46.8	123.3	39.3	0.3	4.0	95.0
VA16M-14DH1294 (2R)	84.6	13.9	43.6	129.0	41.7	6.7	6.0	90.0
VA16M-82 (2R)	83.8	13.9	49.1	123.3	37.0	2.7	5.0	95.0
VA16B-123 (2R)	82.4	13.8	48.0	123.3	35.3	4.3	5.0	100.0
ARS15B09 (2R)	80.6	14.9	47.5	122.3	33.7	0.0	4.0	80.0
ARS15B10 (2R)	80.5	14.5	45.0	123.3	38.3	0.7	4.0	90.0
VA16M-14DH1281 (2R)	80.4	14.1	47.2	122.3	33.7	0.3	5.0	95.0
VA16M-118 (2R)	80.2	13.9	46.5	122.7	36.0	3.0	3.0	100.0
ARS14B15 (2R)	76.5	13.8	47.5	123.0	31.0	4.3	7.0	50.0
ARS14B16 (2R)	72.9	13.7	46.9	122.3	31.3	3.0	5.0	70.0
Thoroughbred	62.7	13.7	36.5	123.3	31.7	7.3	8.0	100.0
ARS15B34 (2R)*	30.3	13.1	---	---	---	---	5.0	20.0
ARS15B06*	6.8	13.4	---	---	---	---	5.0	10.0
ARS15B08 (2R)*	---	---	---	---	---	---	4.0	5.0
Average	89.5	13.8	45.2	123.6	33.8	1.9	4.4	94.2
LSD (0.05)	11.3	0.6	2.0	1.3	2.6	1.8	---	---
C.V.	7.5	2.5	2.7	0.7	4.7	57.9	---	---

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

* These lines were severely impacted by winterkill.

Section 2: Barley Scab Research

One of the primary research objectives of the Virginia Tech barley breeding program is to identify and develop cultivars possessing resistance to Fusarium head blight (FHB) or scab. Each year all barley and hulless barley entries in Virginia's Official State Variety Trials are evaluated for FHB at the Virginia Crop Improvement Association (VCIA) test site in Mt. Holly, VA. Cultivars possessing complete resistance or immunity to FHB have not been identified and resistance levels in currently available cultivars vary from moderately resistant to highly susceptible.

A major goal of the breeding program is to identify and incorporate unique and complementary types of FHB resistance into cultivars to enhance the overall level of resistance. Incorporating multiple resistance genes having additive effects on FHB resistance into cultivars will enhance the overall level of resistance. Because the individual resistance genes are located on different barley chromosomes and each gene confers only partial resistance to FHB, identifying lines having multiple resistance genes is difficult using traditional breeding techniques. To overcome this limitation, our program will incorporate the available markers to help select FHB resistant cultivars.

In 2018, entries were inoculated by spreading scabby corn kernels (50g/4-rows) in plots at the booting stage. A moderately high level of FHB infection was obtained in 2018 as rising temperatures and heavy rainfall during flowering, the most critical time for scab infection.

Among 30 hulless lines and varieties tested in 2018, the FHB index ranged from 16.2 to 81.5 with FHB incidence ranging from 72.5% to 100% and FHB severity from 22.5% to 81.5% (Table 23). Eleven lines had FHB index values lower than the mean (<54.6) in 2018. Two lines, VA15H- 73 (2R) and VA16H-24 (2R) had FHB incidence, severity and index values significantly lower than the test mean.

Among 44 barley lines and varieties tested in 2018, the FHB index varied from 12.3 to 76.8 with FHB incidence ranging from 62.5% to 100% and FHB Severity from 19% to 76.8% (Table 25). Twenty-one lines and five varieties had FHB index values lower than the mean (<54.9) in 2018. Two elite malt barley varieties, Calypso and Violetta, developed in Europe, are currently being recommended for production in the mid-Atlantic and the eastern United States. They both had FHB incidence, severity and index values significantly lower than the test mean.

Table 23. Summary of reaction of entries in the Virginia Tech State Hulless Barley Test to Fusarium head blight (scab), 2018 harvest.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)	
VA15H-73 (2R)	72.5	-	22.5	-	16.2	-	122.8	
VA16H-24 2R	80.0	-	29.0	-	23.3	-	125.5	+
VA16H-25 2R	92.5		29.5		27.4		118.0	
VA16H-27 2R	90.0		31.3		28.3		120.5	
VA16H-28 2R	92.5		33.3		30.9		122.5	
VA16H-26 2R	92.5		34.3		31.7		121.5	
VA15H-11	92.5		40.0		37.3		118.0	
VA15H-12	97.5		38.0		37.5		119.0	
VA16H-159	100.0		46.5		46.5		122.0	
VA15H-90 WS	95.0		52.5		49.7		118.5	
VA14H-33	100.0		52.0		52.0		119.3	
VA15H-9	97.5		58.8		56.9		119.0	
VA14H-58	100.0		58.0		58.0		119.5	
Eve	100.0		58.8		58.8		114.8	-
VA15H-118 WS	100.0		59.5		59.5		121.5	
Dan	100.0		60.8		60.8		119.0	
VA15H-119 WS	100.0		62.8		62.8		121.8	
VA06H-25	100.0		63.8		63.8		121.8	
VA15H-79 WS	100.0		65.0		65.0		119.5	
VA16H-89	97.5		67.0		65.1		121.0	
VA16H-160	100.0		66.8		66.8		119.5	
Doyce	100.0		67.5		67.5		114.5	-
VA07H-35 WS	100.0		67.8		67.8		122.5	
VA06H-79	100.0		68.3		68.3		117.5	
VA16H-218 WS	100.0		69.5		69.5		122.3	
VA08H-79 WS	100.0		69.8		69.8		123.0	
VA16H-158	100.0		70.5		70.5		122.0	
Amaze 10	100.0		71.3		71.3		120.5	
VA16H-247	100.0		74.0		74.0		121.0	
VA16H-276 Seg.	100.0		81.5	+	81.5	+	122.3	
Average	96.7		55.7		54.6		120.3	
LSD (0.05)	74.1		341.6		36.9		2.0	
C.V.	10.0		26.6		28.2		3.4	

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

Scab Incidence (0-10): Based on infected spikes within 4 ft row.

Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

Table 24. Two-year summary of reaction of entries in the Virginia Tech State Hulless Barley Test to Fusarium head blight (scab), 2017 and 2018 harvests.

Line	FHB Incidence[1] (0-10)		FHB Severity[2] (0-10)		FHB Index[3] (0-100)		Flowering Date (Julian)		FDK[4] (%)		ISK[5] (0-100)		DON[6] (ppm)	
VA15H-73 2R	64.4	-	12.5	-	8.8	-	113.8	+	5.0		17.7	-	0.3	-
VA15H-12	75.0	-	25.9		22.4	-	111.5		6.5		19.9	-	3.5	
VA15H-11	81.3		27.3		23.8	-	111.5		13.5		25.4		3.6	
VA14H-33	86.3		33.9		31.8		107.5	-	20.0		26.6		6.7	
Eve	80.6		33.6	-	31.9		105.8	-	13.5		21.0		2.7	
VA15H-90 WS	87.5		35.3		32.3		111.5		14.0		29.5		3.8	
VA15H-118 WS	90.6		36.1		34.9		113.0		22.5		28.3		4.9	
VA15H-9	85.0		39.0		35.4		111.8		8.0		27.6		4.4	
VA06H-25	83.8		38.0		36.0		113.3		10.5		24.0		1.8	
VA14H-58	88.8		38.0		36.2		111.5		16.0		28.7		1.6	
VA15H-119 WS	85.0		17.4	-	38.7		112.5		10.0		30.8		2.5	
VA07H-35 WS	85.6		41.2		39.0		113.5	+	8.5		25.8		4.9	
VA08H-79 WS	86.9		41.8		40.0		114.8	+	5.0		26.3		3.3	
Amaze 10	90.6		43.3		42.0		112.3		20.0		29.1		4.3	
VA15H-79 WS	96.9	+	42.9		42.3		110.0		10.0		34.4	+	6.1	
Doyce	94.4		44.7		43.6		105.8	-	45.0	+	33.4		8.7	+
VA06H-79	95.0		47.6	+	46.7	+	111.0		24.5		35.2	+	5.3	
Average	85.7		35.2		34.5		111.2		14.9		27.3		4.0	
LSD (0.05)	9.5		10.8		10.5		2.1		11.3		6.8		2.8	
C.V.	7.4		20.4		21.2		1.3		35.9		11.8		32.4	

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

[1] Scab Incidence (0-10): Based on infected spikes within 4 ft row.

[2] Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

[3] FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

[4] FDK (%): Fusarium damaged kernels, visual assessment of the percent of infected kernels.

[5] ISK Index = 0.3 *(Severity) + 0.3 *(Incidence)+ 0.4 *(FDK); composite of head and kernel traits.

[6] DON (ppm): Concentration of vomitoxin (deoxynivalenol).

Table 25. Summary of reaction of entries in the Virginia Tech State Barley Test to Fusarium head blight (scab), 2018 harvest.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)	
Calypso	62.5	-	19.0	-	12.3	-	120.3	+
Violetta	92.5		32.3	-	29.6	-	122.0	+
VA11B-141 LA	95.0		35.3		34.0		117.0	
VA16B-236 LA	90.0		42.8		39.2		120.8	+
VA16B-254 LA	92.5		42.0		39.4		120.0	
VA13B-25 LA	95.0		41.3		39.5		113.8	
VA16B-213 LA	92.5		43.0		39.6		119.8	
VA16B-244 LA	97.5		42.8		42.0		118.5	
Secretariat	100.0		43.0		43.0		116.5	
VA16B-264 LA	95.0		47.0		44.8		115.0	
VA16B-203 LA	95.0		47.5		45.1		118.0	
Thoroughbred	90.0		50.3		45.2		119.5	
VA08B-95	100.0		46.8		46.8		113.8	
VA15B-33	95.0		48.8		47.2		119.3	
VA92-42-46	97.5		49.3		48.2		119.0	
Barsoy	100.0		48.3		48.3		113.8	-
VA16B-133	100.0		48.3		48.3		118.0	
VA16B-238 LA	92.5		52.3		48.4		119.3	
VA14B-78	100.0		48.5		48.5		114.8	
VA16B-217 LA	100.0		49.3		49.3		117.5	
VA15B-98 (LA)	97.5		51.8		49.9		116.8	
VA16B-108	97.5		52.0		50.3		118.0	
VA16B-3	97.5		53.5		52.5		115.0	
VA14BFHB-83	92.5		55.8		53.0		117.5	
VA16B-132	100.0		53.0		53.0		116.0	
VA16B-140	97.5		55.8		54.6		118.0	
VA16B-34	97.5		57.8		56.5		116.5	
Atlantic	100.0		58.3		58.3		114.3	
Wysor	100.0		58.8		58.8		117.8	
VA16B-141	100.0		59.0		59.0		117.0	
VA14B-59	100.0		62.5		62.5		117.0	
VA16B-131	100.0		63.5		63.5		120.0	
VA16B-142	95.0		68.0		64.7		116.8	
VA16B-263 LA	100.0		65.0		65.0		118.0	
VA14B-79	100.0		65.5		65.5		115.5	
Callao	100.0		65.8		65.8		116.5	
Price	95.0		70.0		66.9		117.5	
VA12B-56	100.0		67.0		67.0		113.3	-
VA14B-63	100.0		71.0		71.0		120.0	
VA14B-75	100.0		72.0		72.0		117.3	
VA14B-57	100.0		73.3		73.3		116.5	
VA14B-74	100.0		73.3		73.3		118.0	
VA15B-79	100.0		76.8	+	76.8	+	116.5	
Nomini*	---		---		---		---	
Average	96.6		54.2		52.93		117.30	
LSD (0.05)	10.6		21.4		22.49		3.53	
C.V.	78.6		282.2		30.44		2.16	

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

Scab Incidence (0-10): Based on infected spikes within 4 ft row.

Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

*Nomini seed was determined to be mixed with another variety and data therefore is not being reported.

Table 26. Two-year summary of reaction of entries in the Virginia Tech State Barley Test to Fusarium head blight (scab), 2017 and 2018 harvests.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)		FDK[4] (%)	ISK[5] (0-100)		DON[6] (ppm)	
Violetta	68.8	-	17.6	-	15.4	-	114.3	+	27.5	14.5	-	1.56	-
VA11B-141 LA	88.1		21.1	-	19.8	-	109.5		38.0	26.6		5.66	
VA13B-25 LA	82.5	-	24.5		22.4		105.3	-	39.5	23.5	-	2.93	
Thoroughbred	86.9		28.2		25.2		111.0	+	46.0	27.1		3.11	
Secretariat	88.8		26.3		25.4		108.0		34.0	22.4	-	4.78	
VA08B-95	94.4		27.4		27.1		106.8		50.5	29.2		10.41	
VA15B-98 (LA)	90.6		29.2		27.8		109.3		41.0	27.3		2.14	-
Barsoy	93.1		30.3		29.4		106.8		31.5	29.7		6.62	
VA15B-33	96.9		30.3		29.5		109.5		46.0	33.4		5.90	
VA92-42-46	90.6		32.0		30.5		109.5		54.0	26.5		3.60	
VA14B-78	98.1		31.1		30.8		106.5		43.5	33.2		9.81	
Nomini	79.4	-	33.6		31.3		107.0		25.0	20.9	-	1.92	-
VA14BFHB-83	90.0		35.2		33.0		108.3		60.0	30.9		5.64	
Atlantic	92.5		34.1		33.4		104.8	-	48.0	28.7		5.83	
VA12B-56	93.1		38.0		37.4		105.8	-	41.0	28.7		5.13	
VA14B-59	99.4		38.8		38.7		108.0		42.5	34.3	+	7.77	
Price	92.5		41.4		39.1		108.3		43.5	31.0		7.60	
Callao	96.3		40.2		39.6		107.0		48.5	32.3		9.35	
VA14B-79	99.4		40.0		39.9		108.5		31.5	34.1	+	12.61	+
Wysor	97.5		40.6		40.2		109.3		47.5	35.4	+	2.83	
VA14B-57	98.8		42.0		41.9		108.3		35.0	32.6		9.15	
VA14B-63	100.0	+	42.2		42.2		111.3	+	38.0	34.2	+	10.07	
VA14B-74	100.0	+	42.8		42.8		110.0		55.5	33.9	+	11.05	+
VA14B-75	98.1		43.6		43.3		108.3		60.0	33.3		10.70	+
VA15B-79	97.5		46.0		45.6		108.3		42.5	33.2		6.33	
Average	92.53		34.26		33.26		108.36		42.8	29.5		6.50	
LSD (0.05)	7.46		12.44		12.83		2.57		18.9	4.3		3.94	
C.V.	5.67		25.55		27.13		1.67		21.4	7.1		29.35	

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

[1] Scab Incidence (0-10): Based on infected spikes within 4 ft row.

[2] Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

[3] FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

[4] FDK (%): Fusarium damaged kernels, visual assessment of the percent of infected kernels.

[5] ISK Index = 0.3 *(Severity) + 0.3 *(Incidence)+ 0.4 *(FDK); composite of head and kernel traits.

[6] DON (ppm): Concentration of vomitoxin (deoxynivalenol).

*Nomini seed was determined to be mixed with another variety and data therefore is not being reported.

Section 4: Wheat Varieties

Wheat trials were planted in seven-inch rows at Blackstone, Orange, Holland, Painter, and Shenandoah Valley. They were planted in six-inch rows at Blacksburg and Warsaw. The no-till locations (Holland and Shenandoah Valley) were planted at 48 seeds per square foot. All other locations were planted at 44 seeds per square foot.

Selecting the best wheat varieties is challenging but becomes easier with adequate information on performance over multiple environments. Past seasons across Virginia have provided the opportunity to evaluate day length sensitivity, spring freeze damage, glume blotch, scab (Fusarium head blight), and general plant health. 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 by- and over-location tables that are in the top-yielding group and that display good disease resistance.

The released varieties that yielded significantly higher than the statewide mean in 2018, in descending yield order were, L11791, USG 3895, MAS #86, AgriMAXX 415, AgriMAXX 446, MAS #87, USG 3329, USG 3316, Viper, AgriMAXX 486, USG 3197, SH4300, Dyna-Gro 9772 and Pioneer 26R59. AgriMAXX 415 and Viper also had test weight that was significantly higher than the mean of all lines tested. Average yield of all lines tested in 2016-17 was 70.9 bushels per acre, up one from 2016-17.

Released lines with yields higher than the 3-year statewide mean, in descending yield order were, Pioneer Brand 26R59, Croplan 8550, AgriMAXX 474, AgriMAXX 415, Hilliard, USG 3895, #Bullet, Dyna-Gro 9811 and MAS #61. Dyna-Gro 9811, Hilliard and AgriMAXX 415 also had test weight that was significantly higher than the mean of all lines tested over the 3-years.

Producers who grow large acreages of wheat should plant two or more varieties having significantly different maturity dates in order to ensure harvest of high quality grain having high test weight and no sprouting. In Virginia it is typical for sporadic or consistent rain showers to interrupt harvest. These wetting and drying cycles and subsequent delays and significantly reduce grain test weight and quality. Growers can circumvent this problem by planting varieties that differ significantly in maturity. Early maturing varieties often can be harvested first and prior to significant rain showers, and later maturing varieties harvested 42 subsequently will suffer less damage and losses in test weight and quality due to exposure to such a rain event.

Summary of wheat management practices for the 2018 harvest season (All rates are given on a per acre basis.)

Blacksburg - Planted October 4, 2017. Pre-plant fertilizer was 47-120-150-10(S)-3(B). Site was sprayed with .75 oz. Harmony Extra SG® on November 17, 2017. Site was fertilized with 20 units UAN 30-0-0 on March 5, 2018 and with 60 units UAN 30-0-0 plus 0.6 oz. Harmony Extra SG® on April 6, 2018. Harvest occurred June 30, 2018.

Blackstone - Planted October 19, 2017. Pre-plant fertilizer was 300 lb. 10-10-10 on October 17, 2018. Site was top-dressed with 60 lb. N and sprayed with .5 oz. Harmony Extra SG® on February 28, 2018. Additionally, site was fertilized with 40 lb. N using UAN on April 23, 2018. Harvest occurred June 14, 2018.

Warsaw - Planted October 22, 2017. Pre-plant fertilizer was 30-80-80-5 applied October 19, 2017. Site was fertilized using 12-0-0-1.5 at 30 lb. on December 7, 2017 and again on February 9, 2018. Site was also fertilized using 24-0-0-3 at 50 lb. on March 19, 2018. Harmony Extra SG® was applied at .75 oz. with surfactant at 2 qt. /100 gal water on February 28, 2018. Site was treated with 1 qt. Boron on March 27, 2018. Harvest occurred June 14, 2018.

Painter - Planted November 17, 2017. Pre-plant fertilizer was 60 lb. N on November 15, 2017. Application of .75 oz. Harmony Extra SG® was on April 2, 2018. Site was fertilized with 120 lb. N using 30% UAN April 2, 2018. Harvest occurred June 19-20, 2018.

Holland - Planted conventional-till October 25, 2017. Pre-plant fertilizer was 345 lb. 10-17-29 on October 17, 2017. Site was fertilized with 60 units N using 24-0-0-3 plus 0.75 oz. Harmony Extra SG® on February 5, 2018. Site was again fertilized with 60 units N using 24-0-0-3 on April 2, 2018. Site was treated with 16.4 oz. Axel® on March 18, 2018. Site was treated with 4 oz Folicur® on April 26, 2018. Harvest occurred June 13, 2018.

Orange - Planted October 18, 2017. Pre-plant fertilizer was 30-60-0 October 5, 2017. Sixty lb. N plus 0.6 oz. Harmony Extra SG® was applied March 5, 2018. Site was harvested June 28, 2018.

Shenandoah Valley - Planted on October 26, 2017. Pre-plant fertilizer was 1.5 ton broiler litter. Forty units N plus 0.6 oz. Harmony Extra SG® were applied on March 6, 2018. Seventy units N was applied on April 6, 2018. Harvest occurred on June 29, 2018.

Entries in 2017-18 Virginia Wheat Test, arranged by company.

Company	Line	Seed Treatment reported by company
AgriMAXX Wheat Company	**AgriMAXX 415**	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
7167 Highbanks Road	**AgriMAXX 444**	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
Mascoutah, IL 62258	**AgriMAXX 446**	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 463	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 473	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 474	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 480	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX Exp 1892	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 485	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX 486	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
	AgriMAXX Exp 1874	Vibrance™ Extreme, Cruiser® 5FS, Maxim 4FS
Armor Seed, LLC	**Armor Mayhem**	Vibrance™ Extreme
183 Pennsylvania Ave.	**Armor Nemesis**	Vibrance™ Extreme
Waldenburg, AR 72475	**Armor Riptide**	Vibrance™ Extreme
	Armor ARW1716	Vibrance™ Extreme
	Armor ARW1719	Vibrance™ Extreme
	Armor ARW1762	Vibrance™ Extreme
	Armor ARW1766	Vibrance™ Extreme
Crop Production Services	**Dyna-Gro 9522**	Foothold® Virock™ w/ Awaken® ST
15277 Richmond-Tappahannock Hwy	**Dyna-Gro 9600**	Foothold® Virock™ w/ Awaken® ST
St Stephens Church, VA 23148	**Dyna-Gro 9701**	Foothold® Virock™ w/ Awaken® ST
	Dyna-Gro 9750	Foothold® Virock™ w/ Awaken® ST
	Dyna-Gro 9772	Foothold® Virock™ w/ Awaken® ST
	Dyna-Gro 9811	Foothold® Virock™ w/ Awaken® ST
	Dyna-Gro 9862	Foothold® Virock™ w/ Awaken® ST
	Shirley	Foothold® Virock™ w/ Awaken® ST
	WX17775	Foothold® Virock™ w/ Awaken® ST
Dupont Pioneer	**Pioneer 26R10**	Vibrance™ Extreme
425 Abbeydale Way	**Pioneer 26R36**	Vibrance™ Extreme
Columbia, SC 29229	**Pioneer 26R41**	Vibrance™ Extreme
	Pioneer 26R45	Vibrance™ Extreme
	Pioneer 26R59	Vibrance™ Extreme
Eddie Mercer Agri-Services, Inc.	**MBX 14-S-210**	Vibrance™ Extreme, Cruiser® 5FS
6900 Linganore Road	**MBX 17-M-245**	Vibrance™ Extreme, Cruiser® 5FS
Frederick, MD 21702	**MBX 17-P-275**	Vibrance™ Extreme, Cruiser® 5FS
	MBX 18-A-237	Vibrance™ Extreme, Cruiser® 5FS
Erwin-Keith, Inc. (Progeny)	**#Boss**	EverGol™, Gaucho®
1529 Hwy 193	**#Bullet**	EverGol™, Gaucho®
Wynne, AR 72396	**#Turbo**	EverGol™, Gaucho®
	#Warrior	EverGol™, Gaucho®
	#Blaze	EverGol™, Gaucho®
	PGX 16-7	EverGol™, Gaucho®
	PGX 17-20	EverGol™, Gaucho®
	PGX17-16	EverGol™, Gaucho®
Featherstone Farm Seed	**Featherstone 73**	Vibrance™ Extreme
13941 Genito Road		
Amelia, VA 23002		

Entries in 2017-18 Virginia Wheat Test, arranged by company.

Company	Line	Seed Treatment reported by company
University of Georgia	GA061471-15LE38	Dividend® Extreme
1109 Experiment Street	GA08535-15LE29	Dividend® Extreme
Griffin, GA 30223		
Limagrain Cereal Seeds	**L11550**	Raxil MD Pro MD, Imidacloprid
7099 Parkbrook Lane	**L11551**	Vibrance™ Extreme, Cruiser® 5FS
Codova, TN 38018	**L11719**	Abaugh Cereal F & I
	LCS Ammo	Vibrance™ Extreme, Cruiser® 5FS
University of Maryland	15MDX18	Vibrance™ Extreme
1116 Research Greenhouse Complex	15MDX20	Vibrance™ Extreme
College Park, MD 20742	15MDX5	Vibrance™ Extreme
	Luisa	Vibrance™ Extreme
Meherrin Ag & Chemical (Southern Harvest)	**SH 4300**	Vibrance™ Extreme, Super Symcoat®
413 Main Street	**SH 4400**	Vibrance™ Extreme, Super Symcoat®
Severn, NC 27877	**SH 7200**	Vibrance™ Extreme, Super Symcoat®
	SH 7510	Vibrance™ Extreme, Super Symcoat®
Mid-Atlantic Seeds	**MAS #116**	MAS Pro-Shield
316 Albemarle Street	**MAS #316**	MAS Pro-Shield
York, PA 17403	**MAS #61**	MAS Pro-Shield
	MAS #65	MAS Pro-Shield
	MAS #7	MAS Pro-Shield
	MAS #83	MAS Pro-Shield
	MAS #84	MAS Pro-Shield
	MAS #85	MAS Pro-Shield
	MAS #86	MAS Pro-Shield
	MAS #87	MAS Pro-Shield
North Carolina State University	NC13-20076	Dividend® Extreme
840 Method Road Unit 3	NC13-21213	Dividend® Extreme
Raleigh, NC 27695-7629	NC14-23372	Dividend® Extreme
Syngenta Seeds, Inc.	**SY 547**	Vibrance™ Extreme
806 N. 2nd St	**SY Miskin**	Vibrance™ Extreme
Berthoud, CO 80513	**SY Viper**	Vibrance™ Extreme
Tidewater Seed LLC	**TWS2616**	Vibrance™ Extreme
29000 Information Lane, Suite 302	**TWS2818**	Cruiser Maxx® Vibrance® Cereals
Easton, MD 21601	**TWS3418**	Cruiser Maxx® Vibrance® Cereals
UniSouth Genetics, Inc.	**USG 3118**	Vibrance™ Extreme, Cruiser® 5FS
3205-C HWY 46S	**USG 3197**	Vibrance™ Extreme, Cruiser® 5FS
Dickson, TN 37055	**USG 3228**	Vibrance™ Extreme, Cruiser® 5FS
	USG 3316	Vibrance™ Extreme, Cruiser® 5FS
	USG 3329	Vibrance™ Extreme, Cruiser® 5FS
	USG 3404	Vibrance™ Extreme, Cruiser® 5FS
	USG 3429	Vibrance™ Extreme, Cruiser® 5FS
	USG 3458	Vibrance™ Extreme, Cruiser® 5FS
	USG 3536	Vibrance™ Extreme, Cruiser® 5FS
	USG 3895	Vibrance™ Extreme, Cruiser® 5FS

Entries in 2017-18 Virginia Wheat Test, arranged by company.

Company	Line	Seed Treatment reported by company
Virginia Tech and the Virginia	12VTK10-156	Raxil®MD Pro + Gaucho 600
Crop Improvement Association	12VTK15-148	Raxil®MD Pro + Gaucho 600
9142 Atlee Station Road	13VA-FHB-DH131	Raxil®MD Pro + Gaucho 600
Mechanicsville, VA 23111	13VA-FHB-DH252	Raxil®MD Pro + Gaucho 600
	13VTK128-75	Raxil®MD Pro + Gaucho 600
	13VTK429-3	Raxil®MD Pro + Gaucho 600
	13VTK434-89	Raxil®MD Pro + Gaucho 600
	13VTK59-148	Raxil®MD Pro + Gaucho 600
	13VTK82-51	Raxil®MD Pro + Gaucho 600
	DH11SRW066-153	Raxil®MD Pro + Gaucho 600
	DH11SRW069-70	Raxil®MD Pro + Gaucho 600
	DH12SRW056-058	Raxil®MD Pro + Gaucho 600
	DH12SRW057-006	Raxil®MD Pro + Gaucho 600
	DH12SRW057-081	Raxil®MD Pro + Gaucho 600
	DH13SRW021-70	Raxil®MD Pro + Gaucho 600
	DH13SRW021-80	Raxil®MD Pro + Gaucho 600
	DH13SRW023-201	Raxil®MD Pro + Gaucho 600
	DH13SRW025-14	Raxil®MD Pro + Gaucho 600
	Hilliard	Raxil®MD Pro, Imidacloprid, Storicide II
	Massey	Raxil®MD Pro + Gaucho 600
	VA09MAS1-12-5-1-1	Raxil®MD Pro + Gaucho 600
	VA09MAS1-12-5-1-3	Raxil®MD Pro + Gaucho 600
	VA09MAS2-131-6-2	Raxil®MD Pro + Gaucho 600
	VA09MAS2-131-6-2-4	Raxil®MD Pro + Gaucho 600
	VA09MAS6-122-7-1	Raxil®MD Pro + Gaucho 600
	VA12W-31	Raxil®MD Pro + Gaucho 600
	VA12W-68	Raxil®MD Pro + Gaucho 600
	VA13W-174	Raxil®MD Pro + Gaucho 600
	VA15W-130	Raxil®MD Pro + Gaucho 600
	VA15W-131	Raxil®MD Pro + Gaucho 600
	VA15W-30	Raxil®MD Pro + Gaucho 600
	VA15W-63	Raxil®MD Pro + Gaucho 600
	VA15W-67	Raxil®MD Pro + Gaucho 600
	VA15W-68	Raxil®MD Pro + Gaucho 600
	VA15W-70	Raxil®MD Pro + Gaucho 600
	VA15W-91	Raxil®MD Pro + Gaucho 600
	VA15W-92	Raxil®MD Pro + Gaucho 600
	VA16W-104	Raxil®MD Pro + Gaucho 600
	VA16W-105	Raxil®MD Pro + Gaucho 600
	VA16W-124	Raxil®MD Pro + Gaucho 600
	VA16W-148	Raxil®MD Pro + Gaucho 600
	VA16W-149	Raxil®MD Pro + Gaucho 600
	VA16W-152	Raxil®MD Pro + Gaucho 600
	VA16W-196	Raxil®MD Pro + Gaucho 600
	VA16W-202	Raxil®MD Pro + Gaucho 600
	VA16W-224	Raxil®MD Pro + Gaucho 600
	VA16W-229	Raxil®MD Pro + Gaucho 600

Entries in 2017-18 Virginia Wheat Test, arranged by company.

Company	Line	Seed Treatment reported by company
	VA16W-28	Raxil®MD Pro + Gaucho 600
	VA16W-29	Raxil®MD Pro + Gaucho 600
	VA16W-31	Raxil®MD Pro + Gaucho 600
Winfield United	**CROPLAN 8415**	Warden Cereals II
1080 County Road F West, MS 5850	**CROPLAN 8550**	Warden Cereals II
Shoreview, MN 55126-2910	CROPLAN SRW 9415	Warden Cereals II
	CROPLAN SRW 9606	Warden Cereals II

Released cultivars are shown in bold print.

Table 27. Summary of performance of entries in the Virginia Tech Wheat Test over location, 2018 harvest.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		FHB Index (0-100)		Hessian Fly Res.[2]	Awns[3]
	(5)		(6)		(2)		(3)		(3)		(4)		(1)		(1)	
13VTK59-148	80.3	+	56.7	+	126		34		6	+	1	-	39		None	AL
L11719	80.2	+	55.0		127	+	33	-	4		1	-	58		Het-O	A
13VTK429-3	78.7	+	55.9	+	127		34		3		1	-	45		Het-O	A
Armor ARW1766	77.8	+	54.5		124	-	36	+	3		1	-	74	+	N/A	A
USG 3895	76.9	+	53.6	-	126		33		2	-	3	+	56		B	A
MAS #86	76.4	+	53.4	-	126		37	+	3		1		19	-	BCDOL	A
VA16W-202	76.3	+	52.8	-	125	-	32	-	5		0	-	40		BCDOL	AL
DH12SRW056-058	76.3	+	55.3	+	126		36	+	4		3	+	39		None	A
AgriMAXX 415	76.3	+	56.1	+	126		35		3		3	+	31		None	A
AgriMAXX 446	76.2	+	54.9		127	+	34		2		3	+	59		BDOL	A
PGX 17-16	76.2	+	55.3	+	127	+	35		3		1	-	32		BDOL	A
MBX 14-S-210	76.1	+	54.6		127	+	36	+	3		4	+	26		Het-O	A
MAS #87	75.9	+	53.5	-	126		34		4		3	+	36		BCDOL	A
PGX 16-7	75.9	+	54.4		125	-	35		3		1		59		BCDOL	A
USG 3329	75.8	+	54.0		126		36		5		1		29		O	A
VA12W-68	75.7	+	54.2		125	-	34		3		1		40		BCDL, Het-O	A
USG 3316	75.7	+	53.7	-	126		36		3		5	+	26		None	A
SY Viper	75.6	+	56.2	+	125	-	37	+	5	+	1	-	49		None	AL
AgriMAXX 486	75.5	+	54.4		128	+	36	+	4		2		35		BCDOL	A
USG 3197	75.5	+	53.0	-	126		34		3		3	+	18	-	C	A
SH 4300	75.5	+	52.0	-	125	-	35		3		4	+	38		None	A
AgriMAXX Exp 1892	75.2	+	56.8	+	125	-	31	-	3		1		30		L?	A
Dyna-Gro 9772	75.0	+	52.9	-	126		36	+	4		2		20	-	None	A
PGX 17-20	75.0	+	55.1		127		35		3		3	+	35		BDOL	A
VA16W-224	74.8	+	53.5	-	127	+	37	+	2	-	1	-	53		None	AL
VA16W-148	74.8	+	55.0		127	+	35		3		1	-	38		C, Het-B	AL
Pioneer 26R59	74.7	+	54.1		125	-	33	-	2	-	1	-	55		BDL, Het-O	AL
MBX 17-M-245	74.5		53.4	-	125	-	34		2		1		56		BCDOL	AL
WX17775	74.4		53.2	-	126		34		3		3	+	41		BCDOL	A
MAS #316	74.1		54.5		128	+	35		5		3	+	54		BCDOL	A
CROPLAN SRW 9415	74.0		54.8		128	+	35		2	-	4	+	68		BCDOL	A
MAS #116	74.0		54.3		127	+	36	+	3		1		55		BCDOL	A
Armor ARW1719	74.0		53.2	-	127		35		4		3	+	35		N/A	A
Pioneer 26R10	73.7		54.5		127	+	35		2		3	+	40		BCDOL	A
USG 3228	73.5		52.8	-	126		33		5		4	+	11	-	None	TA
USG 3536	73.4		53.7	-	127		37	+	4		1		49		BDOL	A
#Warrior	73.3		53.5	-	125	-	34		2	-	2		65		BCDOL	AL
USG 3458	73.3		53.5	-	125	-	35		3		2		70	+	BCDOL	AL
AgriMAXX 480	73.2		56.1	+	122	-	35		6	+	1	-	44		N/A	A
VA09MAS2-131-6-2	73.2		54.7		124	-	30	-	2	-	1	-	49		C	AL

Table 27. Summary of performance of entries in the Virginia Tech Wheat Test over location, 2018 harvest.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	FHB Index (0-100)	Hessian Fly Res.[2]	Awns[3]
	(5)	(6)	(2)	(3)	(3)	(4)	(1)	(1)	
CROPLAN SRW 9606	73.1	53.5 -	125 -	35	2	3 +	52	BCDOL	A
Shirley	72.9	53.9 -	127 +	34	2 -	0 -	59	C	AL
AgriMAXX Exp 1874	72.8	53.4 -	124 -	35	2	1	52	CO	A
SY 547	72.8	54.6	126	36 +	3	1 -	36	None	TA
AgriMAXX 473	72.8	53.7 -	127 +	35	4	1 -	40	BDOL	A
MBX 17-P-275	72.7	52.6 -	126	32 -	4	3 +	12 -	None	TA
VA16W-124	72.7	55.0	125 -	35	5	1	55	BCDOL	A
AgriMAXX 474	72.6	53.0 -	124 -	34	2 -	2	64	BCDOL	TA
Pioneer 26R41	72.5	53.9 -	127 +	33 -	2	2	43	BCDOL	A
Luisa	72.5	56.7 +	125 -	36 +	4	1 -	39	None	A
#Blaze	72.5	53.7 -	126	35	6 +	2	30	O	A
L11550	72.2	53.8 -	127 +	34	5	2	40	None	A
Armor ARW1716	72.2	56.9 +	125 -	32 -	3	1	23	N/A	A
AgriMAXX 463	72.1	52.7 -	126	33	5	4 +	18 -	None	TA
CROPLAN 8550	72.0	53.6 -	127	36 +	3	1	44	BCDOL	A
VA12W-31	72.0	55.1	126	34	6 +	1	50	None	A
#Boss	71.9	51.9 -	125 -	33	3	2	40	None	A
VA09MAS2-131-6-2-4	71.8	54.4	125 -	31 -	3	1 -	45	None	AL
VA15W-91	71.8	54.5	127	34	4	1 -	52	None	A
CROPLAN 8415	71.7	54.6	126	36	6 +	1	69 +	BCDOL	AL
L11551	71.6	55.5 +	127	33	4	1	18 -	None	A
Armor Riptide	71.5	53.3 -	124 -	34	2 -	2	60	BCDOL	AL
DH11SRW066-153	71.5	56.6 +	128 +	36 +	3	1 -	39	BDOL	A
DH12SRW057-081	71.4	56.4 +	126	33 -	5	3 +	45	None	TA
13VTK82-51	71.4	55.0	128 +	33	4	2	42	None	A
AgriMAXX 444	71.3	54.0	128 +	35	3	3 +	27	None	A
DH13SRW025-14	71.3	54.8	123 -	32 -	4	1 -	29	O	A
VA16W-149	71.1	53.7 -	126	34	3	1	55	None	AL
MAS #7	71.1	54.5	127 +	36 +	3	2	44	Het-O	TA
VA15W-30	71.0	53.6 -	127	34	6 +	1	56	None	A
VA16W-105	71.0	52.5 -	127 +	34	5	1	33	BCDOL	A
#Bullet	71.0	53.7 -	127 +	36 +	5	1	47	BCDOL	A
DH13SRW023-201	71.0	59.5 +	127 +	34	3	0 -	35	None	A
MBX 18-A-237	70.9	56.1 +	122 -	35	5	1 -	50	N/A	A
Armor Mayhem	70.8	53.7 -	127 +	37 +	4	1	49	BCDOL	A
Featherstone 73	70.8	55.8 +	128 +	34	6 +	3 +	49	C	TA
Hilliard	70.8	54.2	126	36	3	1 -	28	BCD	A
Dyna-Gro 9811	70.8	54.4	125 -	36	3	1	40	BCD	A
USG 3404	70.8	53.7 -	128 +	34	2	2	38	BCDOL	A
DH13SRW021-70	70.7	54.6	125 -	33 -	4	1	30	None	TA

Table 27. Summary of performance of entries in the Virginia Tech Wheat Test over location, 2018 harvest.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	FHB Index (0-100)	Hessian Fly Res.[2]	Awns[3]
	(5)	(6)	(2)	(3)	(3)	(4)	(1)	(1)	
TWS3418	70.7	54.1	128 +	34	5	3 +	47	N/A	AL
VA16W-104	70.7	54.0	126	34	3	1 -	73 +	Het-O	A
VA16W-229	70.7	54.1	125 -	33 -	3	1	55	BCDOL	A
MAS #83	70.7	53.6 -	126	35	4	2	45	BCDOL	A
DH11SRW069-70	70.6	52.8 -	129 +	34	5	2	69	None	A
DH12SRW057-006	70.4	57.4 +	127 +	31 -	2	1 -	52	None	AL
12VTK10-156	70.4	53.9 -	127 +	34	6 +	2	47	BCDOL	A
VA16W-29	70.4	54.8	127 +	36	3	0 -	63	BCDL, Het-O	AL
SH 7200	70.1	55.7 +	125 -	36	4	2	62	BCDOL	A
Dyna-Gro 9701	70.1	53.9 -	127	36 +	4	1	44	BCDOL	A
Dyna-Gro 9750	70.0	52.8 -	126	34	6 +	3 +	35	None	TA
Pioneer 26R45	69.7	54.5	126	34	4	2	43	BDOL	AL
VA15W-63	69.7	54.9	126	33 -	3	1	47	BCDOL	AL
MAS #61	69.6	53.7 -	124 -	33 -	5	3 +	37	None	A
TWS2818	69.3	54.5	127 +	35	3	3 +	47	N/A	TA
Dyna-Gro 9600	69.3	52.0 -	125 -	35	3	2	41	None	A
VA15W-131	69.2	55.2 +	127	34	3	1	79 +	None	AL
VA09MAS1-12-5-1-1	69.2	57.1 +	127 +	35	4	3 +	59	None	A
15MDX20	69.2	54.0	127	34	4	1	33	D?	A
13VTK128-75	69.1	54.1	127	31 -	4	2	77 +	BCD	AL
MAS #65	69.1	53.6 -	125 -	34	2	2	55	BCDOL	AL
13VTK434-89	69.0	56.1 +	126	36 +	4	1 -	21 -	CD	A
SH 7510	69.0	53.7 -	127 +	35	4	2	44	B	A
13VA-FHB-DH252	68.9	56.3 +	129 +	36 +	5	1	43	None	A
12VTK15-148	68.9	54.0	127	34	2 -	0 -	50	None	LAL
USG 3429	68.8	55.1	127 +	33 -	5	5 +	46	BC, Het-D	TA
MAS #84	68.8	54.2	125 -	33	6 +	4 +	52	None	AL
DH13SRW021-80	68.7	54.9	126	33 -	6 +	0 -	51	None	A
Dyna-Gro 9522	68.7	53.8 -	127 +	35	4	3 +	39	None	A
SY Miskin	68.7	55.2 +	125 -	35	4	4 +	44	N/A	A
AgriMAXX 485	68.6	54.1	127 +	34	4	3 +	31	BCDOL	TA
#Turbo	68.5	54.3	124 -	33	4	1	37	D?	TA
VA15W-67	68.5	55.5 +	127 +	35	2 -	1 -	48	BCDOL	AL
VA16W-196	68.2	54.1	129 +	34	4	1	44	Het-B	TA
13VA-FHB-DH131	68.1	56.2 +	125 -	34	6 +	2	45	CD	A
VA16W-152	68.0	53.3 -	126	34	5	1 -	44	None	AL
GA08535-15LE29	67.8	56.3 +	126	36 +	4	3 +	61	None	A
Pioneer 26R36	67.7	54.5	127 +	34	5	6 +	38	BCDOL	A
VA09MAS1-12-5-1-3	67.7	56.0 +	127 +	35	6 +	1	63	None	A
LCS Ammo	67.6	53.9	127 +	33 -	4	1	28	BCD	A

Table 27. Summary of performance of entries in the Virginia Tech Wheat Test over location, 2018 harvest.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		FHB Index (0-100)		Hessian Fly Res.[2]	Awns[3]
	(5)		(6)		(2)		(3)		(3)		(4)		(1)		(1)	
Armor Nemesis	67.5		55.5	+	127	+	33		5		4	+	56		BCD	TA
VA15W-130	67.5		54.8		126		34		4		1	-	54		None	AL
VA15W-68	67.5		55.6	+	126		34		3		1	-	51		BCDOL	AL
VA16W-28	67.0	-	55.9	+	128	+	33		2	-	1	-	45		None	AL
USG 3118	67.0	-	55.0		124	-	32	-	4		0	-	55		BCDOL	LAL
VA09MAS6-122-7-1	66.8	-	54.9		125	-	31	-	3		1	-	39		None	A
TWS2616	66.5	-	53.6	-	124	-	35		5	+	3	+	38		BCDL, Het-O	A
SH 4400	66.4	-	53.8	-	127	+	36		4		5	+	56		BDOL	TA
15MDX18	66.4	-	55.3	+	127	+	32	-	3		2		51		D?	A
Dyna-Gro 9862	65.8	-	54.7		127	+	34		3		3	+	46		BCDL, Het-O	TA
NC13-21213	65.3	-	55.4	+	126		34		5		1		58		BCDL, Het-O	TA
VA15W-70	64.9	-	55.1		126		33	-	2		0	-	49		Het-BCDL	AL
MAS #85	64.2	-	54.6		127	+	36		4		5	+	48		None	TA
VA13W-174	63.8	-	53.5	-	125	-	36		3		1	-	44		C	A
VA15W-92	63.6	-	52.9	-	125	-	33	-	5		1	-	69	+	None	A
VA16W-31	63.4	-	55.6	+	126		33	-	1	-	1		54		None	TA
GA061471-15LE38	63.2	-	56.0	+	127	+	36	+	5		2		70	+	C	A
NC14-23372	63.1	-	57.3	+	128	+	35		4		0	-	42		BCDOL	A
15MDX5	61.1	-	56.6	+	124	-	33		7	+	1	-	26		None	A
Armor ARW1762	61.1	-	54.5		127		36	+	2	-	3	+	30		N/A	AL
NC13-20076	60.8	-	56.8	+	126		35		6	+	1		22	-	BCDL, Het-O	A
Massey	56.6	-	55.2	+	127		37	+	6	+	1		36		None	AL
Average	70.9		54.5		126		34		4		2		45			
LSD (0.05)	3.6		0.6		1		1		2		1		23			
C.V.	8.3		1.9		1		5		54		43		37			

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

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

[1] BYD = Barley Yellow Dwarf Virus.

[2] Seedlings were screened for resistance to biotypes B, C, D, O, and L of Hessian Fly. Letter in column indicates either had been treated with insecticide or was otherwise unavailable for screening.

[3] A=awned, AL=awnletted, LAL=long awnletted, TA=tip awned.

Table 28. Two-year average summary of performance of entries in the Virginia Tech Wheat Tests, 2017 and 2018 harvests.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		Leaf Rust (0-9)		BYD Virus[1] (0-9)		Stripe Rust (0-9)		FHB Index (0-100)		Early Height (In)	
	(11)		(12)		(4)		(6)		(8)		(7)		(3)		(3)		(2)		(2)		(3)	
MBX 17-M-245	78.1	+	53.7	-	118	-	33		2	-	1	-	5	+	1		0		38		9	
USG 3458	77.4	+	53.4	-	118	-	34		2		2		5	+	2		0		45	+	9	
CROPLAN 8550	76.4	+	54.6		120	+	36	+	2		1	-	1	-	1		0		25		10	
MAS #116	76.3	+	55.1		120	+	36	+	2		1	-	2	-	1		0		30		10	
AgriMAXX 473	75.9	+	54.7		120	+	35	+	3		1	-	2	-	1		1		22		10	
AgriMAXX 415	75.8	+	56.2	+	119		34		2		3	+	3		1		0		23		9	
Pioneer 26R45	75.4	+	54.6		119		34		3		2		2		2		0		25		8	-
Pioneer 26R59	75.4	+	54.6		119	-	32	-	1	-	1	-	4	+	2	+	0		38		9	
MBX 14-S-210	75.2	+	55.0		121	+	36	+	2		3	+	1	-	1		1		19		9	
USG 3895	75.2	+	54.2		119		33		2	-	4	+	2	-	1	-	0		36		9	
USG 3536	75.1	+	54.7		120	+	37	+	3		1	-	1	-	1		0		28		9	
#Warrior	75.0	+	53.9	-	118	-	33		1	-	2		5	+	1		0		44	+	9	
#Bullet	74.9	+	54.6		120	+	36	+	3		1	-	1	-	1		0		26		9	
Armor Mayhem	74.8	+	54.7		120	+	36	+	3		1	-	2		1		0		28		10	
CROPLAN SRW 9606	74.6		54.3		119	-	34		2		2		3		1		0		35		9	
CROPLAN SRW 9415	74.6		55.0		121	+	35		1	-	4	+	4	+	1		0		40		9	
AgriMAXX 474	74.6		53.8	-	118	-	33		2	-	1	-	5	+	1		0		42		9	
VA15W-63	74.2		55.5	+	119		33	-	2	-	1	-	1	-	1	-	2	+	34		9	
Dyna-Gro 9701	74.2		54.7		120		36	+	2		1	-	1	-	2		0		25		10	
AgriMAXX 446	73.9		55.1		121	+	34		1	-	3	+	5	+	1		0		38		9	
Pioneer 26R41	73.5		54.5		120	+	32	-	2	-	2	-	2		1		0		37		10	
CROPLAN 8415	73.5		55.0		119		34		4	+	1	-	3		2		0		50	+	11	
PGX 16-7	73.5		54.6		118	-	33		2		1	-	2		1		0		32		11	
USG 3404	73.3		54.4		121	+	34		2	-	2		3		1		0		24		10	
VA09MAS2-131-6-2	73.1		54.7		116	-	28	-	1	-	1	-	1	-	1		0		35		10	
AgriMAXX 463	73.1		53.3	-	119	-	32	-	3		4	+	3		1		0		11	-	9	
SH 7510	73.0		55.2	+	120	+	34		3	+	2		1	-	1		0		32		10	
VA09MAS2-131-6-2-4	73.0		54.5		118	-	30	-	2		1	-	1	-	1		0		25		10	

Table 28. Two-year average summary of performance of entries in the Virginia Tech Wheat Tests, 2017 and 2018 harvests.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	Leaf Rust (0-9)	BYD Virus[1] (0-9)	Stripe Rust (0-9)	FHB Index (0-100)	Early Height (In)
	(11)	(12)	(4)	(6)	(8)	(7)	(3)	(3)	(2)	(2)	(3)
Shirley	73.0	54.1 -	120	32 -	2	0 -	1 -	1	5 +	45 +	11
AgriMAXX 444	73.0	54.5	121 +	34	2	3	4 +	1 -	0	19	10
VA12W-68	72.9	54.6	118 -	33 -	3	2	1 -	1	0	23	13 +
Pioneer 26R10	72.8	54.5	121 +	34	2	3 +	5 +	2	0	29	10
VA12W-31	72.7	55.4 +	119	33	4 +	1 -	1 -	1	1	40	9
Hilliard	72.2	55.0	119	35	2	1 -	2	1	0	23	11
#Blaze	72.1	54.2	119	34	4 +	2	5 +	2 +	0	19	8 -
MAS #316	72.0	54.9	121 +	35 +	3	3 +	4 +	2	0	30	8 -
L11550	71.9	55.3 +	121 +	34	3	2	1 -	1	0	36	9
SY Viper	71.8	56.3 +	118 -	35 +	4 +	2 -	5 +	2	0	39	11
MAS #7	71.7	55.2 +	121 +	35 +	2	1 -	5 +	2	0	28	8 -
Dyna-Gro 9811	71.6	55.0	119 -	34	2	1 -	2 -	2	0	32	12 +
USG 3316	71.6	54.0 -	120 +	35 +	2 -	6 +	7 +	1	3 +	17 -	9
MAS #61	71.6	54.1 -	117 -	33	4 +	3 +	2	1	1	22	9
Armor Nemesis	71.5	56.2 +	121 +	33	3 +	4 +	0 -	1	1	35	10
DH11SRW069-70	71.5	53.9 -	122 +	34	3	2	2	1	0	46 +	10
DH12SRW057-006	71.4	57.9 +	121 +	31 -	2	1 -	1 -	1	0	35	9
MBX 17-P-275	71.4	53.2 -	119 -	32 -	3	4 +	3 +	1	0	7 -	11
USG 3228	71.4	53.4 -	119 -	33	3	4 +	2	1	0	7 -	11
Dyna-Gro 9750	71.3	53.4 -	119	33	3	4 +	3	1	0	20	10
VA09MAS1-12-5-1-1	71.2	57.6 +	120 +	34	4 +	3 +	1 -	1	0	41	11
USG 3197	71.2	52.7 -	119 -	35 +	3	3 +	1 -	1	1	11 -	10
VA09MAS1-12-5-1-3	70.6	56.9 +	121 +	35 +	4 +	1 -	0 -	1	0	43 +	11
Armor Riptide	70.4	53.9 -	118 -	33	1 -	2 -	4 +	3 +	0	43 +	9
Dyna-Gro 9522	70.2	54.3	121 +	35	2	3 +	4 +	1	0	25	9
DH12SRW056-058	70.2	55.8 +	119	35 +	2	3	1 -	2	0	27	12 +
Dyna-Gro 9772	70.2	52.6 -	119 -	35 +	3	3 +	2	2	0	13 -	10
Dyna-Gro 9600	69.8	52.5 -	118 -	34	2	1 -	1 -	2 +	3 +	23	10

Table 28. Two-year average summary of performance of entries in the Virginia Tech Wheat Tests, 2017 and 2018 harvests.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)	Leaf Rust (0-9)	BYD Virus[1] (0-9)	Stripe Rust (0-9)	FHB Index (0-100)	Early Height (In)
	(11)	(12)	(4)	(6)	(8)	(7)	(3)	(3)	(2)	(2)	(3)
SY 547	69.2	55.3 +	119 -	35 +	3	1 -	2	3 +	1	22	11
Pioneer 26R36	68.6	54.9	120 +	34	3	6 +	2	1	0	23	9
SH 7200	68.3 -	55.8 +	118 -	35	3	2	1 -	1	2 +	45 +	13 +
Featherstone 73	68.1 -	56.4 +	120 +	33	3	2	0 -	3 +	0	33	11
#Turbo	67.9 -	55.0	118 -	32 -	2	1 -	1 -	1 -	0	24	12 +
SH 4300	67.7 -	52.3 -	119	33	2	4 +	5 +	2	2 +	22	8 -
#Boss	67.5 -	52.1 -	118 -	32 -	2	2	3	3 +	1	27	11
Dyna-Gro 9862	67.4 -	55.4 +	121 +	33	3	3 +	5 +	1	0	26	9
VA13W-174	66.7 -	54.8	118 -	35	2	1 -	1 -	1	3 +	25	12 +
USG 3118	66.6 -	55.4 +	118 -	30 -	3	0 -	0 -	1	0	34	13 +
VA09MAS6-122-7-1	65.4 -	55.3 +	118 -	30 -	2	1 -	0 -	2	0	24	12 +
SH 4400	63.3 -	54.4	121 +	36 +	2	5 +	4 +	1	0	31	9
NC13-21213	62.4 -	55.9 +	119	33	4 +	1 -	1 -	2	0	43 +	11
Massey	48.1 -	54.4	119	35	6 +	1 -	9 +	2 +	0	22	14 +
Average	71.6	54.7	119	34	3	2	3	1	0	30	10
LSD (O.05)	3.1	0.5	0	1	1	0	1	1	1	12	2
C.V.	9.8	2.3	1	5	62	38	37	50	227	29	11

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

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

[1] BYD = Barley Yellow Dwarf Virus.

Table 29. Three-year average summary of performance of entries in the Virginia Tech Wheat Tests, 2016, 2017, and 2018 harvests.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		Leaf Rust (0-9)		BYD Virus[1] (0-9)		Stripe Rust (0-9)		Leaf Blotch (0-9)		Early Height (In)	
	(16)		(17)		(6)		(8)		(11)		(11)		(7)		(4)		(5)		(1)		(3)	
Pioneer 26R59	72.3	+	55.1		119		31	-	1	-	1	-	4	+	2		0	-	2		10	-
CROPLAN 8550	72.2	+	54.9		120	+	35	+	2		1	-	1	-	1		0	-	2		10	-
AgriMAXX 474	71.1	+	54.4	-	119	-	32		1	-	2	-	5	+	1		0	-	2		10	-
AgriMAXX 415	70.8	+	56.6	+	119		33		2		3	+	3		1		1		2		10	
Hilliard	70.6	+	55.7	+	119	-	34	+	2		1	-	2	-	1		0	-	1		13	+
USG 3895	70.3	+	54.4	-	119		32	-	1	-	4	+	1	-	1	-	0	-	1		10	-
#Bullet	70.3	+	54.9		121	+	35	+	2		1	-	2	-	1		0	-	1		10	-
PGX 16-7	70.2	+	55.5	+	117	-	32	-	2		1	-	2		1		0	-	1		13	+
MBX 14-S-210	70.1	+	55.1		121	+	35	+	2	-	2	+	1	-	1		1		1		10	-
Dyna-Gro 9811	69.9	+	55.8	+	118	-	33		2		1	-	1	-	2		0	-	1		13	+
MAS #61	69.8	+	54.7		118	-	32	-	4	+	3	+	2	-	1		1		1		10	-
VA12W-31	69.5		55.8	+	120	+	32		3	+	1	-	1	-	1		2	+	1		9	-
VA12W-68	69.5		55.4		117	-	31	-	2		1	-	1	-	1		0	-	1		14	+
CROPLAN 8415	69.3		55.7	+	118	-	33		3	+	1	-	4	+	2		1		1		13	+
L11550	69.2		55.9	+	120	+	33		3		2		1	-	1		0	-	1		11	
Shirley	69.2		53.9	-	120	+	31	-	2		0	-	1	-	1		6	+	1		11	
Pioneer 26R41	68.9		54.7	-	120	+	31	-	1	-	2	-	2		1		0	-	3	+	11	
Pioneer 26R10	68.5		54.8		121	+	33		2		3	+	6	+	1		0	-	2		10	-
AgriMAXX 446	68.5		55.3		121	+	33		1	-	3	+	5	+	1		0	-	4	+	10	
AgriMAXX 444	68.3		54.5	-	121	+	33		2		3	+	4	+	1		0		2		10	-
SY Viper	68.3		56.7	+	117	-	35	+	4	+	2	-	5	+	1		0	-	1		13	+
USG 3197	68.0		53.1	-	119		34	+	2		3	+	2	-	1		2	+	1		11	
MAS #7	68.0		55.3		121	+	34	+	2		1	-	5	+	1		1		2		9	-
USG 3404	67.9		54.5	-	121	+	33		2	-	2	+	4	+	1		0	-	2		10	-
SY 547	66.7		55.6	+	118	-	34	+	2		1	-	2	-	3	+	2	+	1		13	+
Dyna-Gro 9522	66.3		54.4	-	121	+	33		2		3	+	4	+	1		0	-	3	+	10	
Dyna-Gro 9772	66.1		53.0	-	118	-	34	+	3		3	+	2		1		2	+	1		12	
Dyna-Gro 9600	65.8		53.1	-	118	-	33		2		1	-	1	-	2		3	+	2		13	+

Table 29. Three-year average summary of performance of entries in the Virginia Tech Wheat Tests, 2016, 2017, and 2018 harvests.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Date Headed (Julian)		Mature Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)		Leaf Rust (0-9)		BYD Virus[1] (0-9)		Stripe Rust (0-9)		Leaf Blotch (0-9)		Early Height (In)	
	(16)		(17)		(6)		(8)		(11)		(11)		(7)		(4)		(5)		(1)		(3)	
Featherstone 73	65.6		57.0	+	119		32		3		2		0	-	2	+	0	-	1		13	+
USG 3118	64.8		56.2	+	116	-	30	-	3	+	0	-	0	-	1		1		1		14	+
VA09MAS6-122-7-1	64.5	-	56.1	+	118	-	29	-	2		1	-	1	-	1		0	-	1		12	
USG 3316	64.4	-	54.0	-	120	+	34	+	2	-	6	+	7	+	1		4	+	3	+	10	-
SH 7200	64.4	-	56.5	+	117	-	33		3	+	2		1	-	1		3	+	1		15	+
VA13W-174	64.2	-	55.7	+	116	-	33		2		1	-	1	-	1		2	+	1		14	+
SH 4300	64.0	-	52.5	-	119		32		2		4	+	5	+	2	+	4	+	2		9	-
Pioneer 26R36	63.3	-	55.2		120	+	33		3		6	+	2		1		0	-	3	+	9	-
SH 4400	58.8	-	54.5	-	121	+	35	+	2		4	+	4	+	1		0	-	2		9	-
Massey	47.5	-	55.3		118	-	34	+	5	+	1	-	8	+	2	+	2		1		17	+
Average	67.3		55.1		119		33		2		2		3		1		1		2		11	
LSD (O.05)	2.5		0.4		0		1		1		0		1		1		1		1		1	
C.V.	10.0		1.9		1		5		64		40		41		54		93		32		10	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

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

[1] BYD = Barley Yellow Dwarf Virus.

Table 30. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern VA AREC in Warsaw, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)
L11719	---	---	87.1 +	57.2	122	33	3	0
USG 3329	---	---	84.5 +	57.1	121	36 +	4	0
AgriMAXX 446	76.3	87.0 +	83.5 +	57.4	122 +	34	2	3 +
13VTK59-148	---	---	83.0 +	58.4 +	121	35	6 +	1
VA16W-202	---	---	82.3 +	54.8 -	121	31 -	4	0
USG 3895	81.0 +	87.9 +	81.3 +	56.2	120	32 -	2	3 +
CROPLAN SRW 9415	---	85.4	81.0 +	56.8	123 +	34	2	4 +
PGX 17-16	---	---	80.9 +	58.3 +	122 +	36 +	3	0
Shirley	73.8	80.0	80.2 +	55.9	122 +	33	3	0
AgriMAXX Exp 1892	---	---	79.7 +	59.1 +	120 -	31 -	3	1
AgriMAXX 486	---	---	78.8 +	57.2	124 +	35	3	2
Pioneer 26R10	74.0	85.1	78.6 +	57.3	122	35	2	2
Armor ARW1719	---	---	78.5 +	55.4 -	122 +	34	3	1
Dyna-Gro 9772	74.1	83.8	78.3 +	54.6 -	121	35 +	3	2
AgriMAXX 415	78.4 +	86.6 +	78.0 +	57.8 +	120 -	35 +	3	2
USG 3197	76.2	82.6	78.0 +	54.7 -	120 -	35	2	2
USG 3228	---	86.3	77.9 +	54.4 -	121	33	4	3 +
MAS #316	---	86.4	77.9 +	57.4	123 +	36 +	4	3 +
USG 3316	64.0 -	75.2 -	77.6 +	56.8	122	35	2	5 +
VA16W-224	---	---	77.6 +	55.8 -	123 +	36 +	2	0
DH11SRW066-153	---	---	77.5 +	58.9 +	124 +	35	3	1
VA15W-67	---	---	77.5 +	56.9	122 +	33	2	0
MBX 14-S-210	78.0	87.1 +	77.3 +	56.6	122 +	34	2	3 +
Armor ARW1766	---	---	77.3 +	55.7 -	120 -	36 +	3	0
VA12W-68	79.6 +	83.9	77.3 +	56.7	120 -	34	3	0
MBX 17-M-245	---	87.0 +	77.2 +	56.0	120	34	2	1
MAS #86	---	---	77.1	56.1	121	36 +	3	1
VA16W-29	---	---	76.9	56.7	123 +	34	2	0
WX17775	---	---	76.9	55.3 -	122	34	3	1
Dyna-Gro 9600	73.7	82.9	76.7	54.9 -	119 -	34	4	0
Armor ARW1716	---	---	76.2	59.2 +	120	31 -	3	0
MAS #87	---	---	76.1	55.4 -	122 +	33	2	1
CROPLAN SRW 9606	---	88.0 +	75.9	55.8 -	120	34	3	2
Pioneer 26R41	77.8	85.8	75.9	56.5	121	32	3	2
#Blaze	---	83.0	75.9	57.0	121	35 +	4	1
PGX 17-20	---	---	75.7	57.6 +	121	35	3	3 +
12VTK15-148	---	---	75.7	56.1	122 +	32 -	2	0
USG 3458	---	87.1 +	75.5	56.2	120 -	34	3	1
Pioneer 26R59	80.4 +	87.6 +	75.5	56.0	121	32 -	2 -	0
CROPLAN 8415	77.9	82.8	75.4	56.5	120	35 +	4	1
MBX 17-P-275	---	83.6	75.3	54.7 -	121	33	3	3 +

Table 30. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern VA AREC in Warsaw, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)	Test Weight (Lb/bu)		Date Headed (Julian)		Height (In)		Plant Lodging (0-9)		Powdery Mildew (0-9)	
SH 4300	69.4	-	74.9	-	75.3	55.0	-	120		34		3		4	+
Pioneer 26R45	---		87.5	+	75.3	56.9		121		34		3		2	
AgriMAXX 463	---		84.3		75.3	54.0	-	121		32		4		4	+
VA09MAS2-131-6-2-4	---		86.0		75.3	56.1		119	-	29	-	2		0	
VA15W-91	---		---		75.2	55.7	-	121		33		3		0	
#Boss	---		79.7		75.1	54.5	-	120	-	32		2		1	
DH12SRW057-006	---		82.8		75.1	59.8	+	123	+	30	-	3		0	
Featherstone 73	76.4		83.9		75.1	57.7	+	122	+	33		5	+	2	
VA16W-149	---		---		74.9	57.2		121		33		2		0	
#Turbo	---		81.4		74.7	56.0		119	-	33		2	-	1	
DH12SRW056-058	---		81.3		74.6	57.1		120		35	+	3		2	
13VTK429-3	---		---		74.6	58.9	+	122		34		3		0	
#Warrior	---		83.3		74.3	55.7	-	120	-	33		2		1	
PGX 16-7	80.1	+	85.4		74.3	56.7		119	-	33		2		1	
DH12SRW057-081	---		---		73.8	58.1	+	121		31	-	3		3	+
VA16W-31	---		---		73.5	57.9	+	121		30	-	1	-	0	
VA16W-196	---		---		73.4	57.2		125	+	32		2		0	
Armor Riptide	---		84.9		73.3	55.4	-	120	-	33		2		1	
13VA-FHB-DH252	---		---		73.2	59.4	+	123	+	36	+	4		0	
VA09MAS2-131-6-2	---		80.4		73.2	56.7		119	-	27	-	1	-	0	
VA15W-68	---		---		73.1	58.0	+	121		33		3		0	
L11551	---		---		72.9	57.8	+	121		33		3		1	
AgriMAXX 473	---		89.4	+	72.8	55.9		122		36	+	3		0	
VA15W-30	---		---		72.6	55.0	-	121		34		5	+	1	
AgriMAXX 474	77.8		84.8		72.5	55.6	-	120	-	32		2	-	1	
SY Viper	78.9	+	84.1		72.5	58.0	+	120	-	36	+	5	+	0	
VA16W-229	---		---		72.3	55.9		121		31	-	3		1	
Armor Mayhem	---		88.6	+	72.3	56.2		122	+	36	+	4		1	
AgriMAXX Exp 1874	---		---		72.2	55.2	-	120	-	34		1	-	1	
DH11SRW069-70	---		82.2		72.1	56.0		124	+	33		4		1	
Luisa	---		---		72.0	57.9	+	119	-	36	+	4		1	
Dyna-Gro 9522	74.0		82.0		71.9	56.5		123	+	33		2		3	+
Dyna-Gro 9750	---		81.1		71.8	54.3	-	121		33		4		2	
TWS3418	---		---		71.7	56.7		123	+	34		3		2	
VA15W-63	---		80.6		71.6	56.2		121		31	-	3		0	
AgriMAXX 444	73.1		79.8		71.6	56.3		123	+	34		3		2	
AgriMAXX 480	---		---		71.6	57.2		117	-	35		4		1	
LCS Ammo	---		---		71.4	55.9		121		32	-	3		1	
CROPLAN 8550	83.8	+	89.0	+	71.2	56.1		122		36	+	2		1	
SY 547	72.1		79.0		71.1	56.1		121		36	+	3		0	
VA12W-31	75.0		79.6		71.0	56.9		122		32		4		0	

Table 30. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern VA AREC in Warsaw, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)
Dyna-Gro 9701	---	88.3 +	71.0	55.8 -	122	36 +	2	0
USG 3536	---	85.7	70.6	56.3	122	36 +	3	0
TWS2818	---	---	70.4	56.3	123 +	33	2	2
DH13SRW023-201	---	---	70.4	61.7 +	121	32	3	0
Hilliard	77.5	79.2	70.4	57.3	120	36 +	3	0
VA16W-105	---	---	70.3	54.7 -	122	33	1 -	0
MAS #116	---	87.9 +	70.3	56.1	122	36 +	4	1
DH13SRW021-80	---	---	70.0	57.1	121	33	5 +	0
MAS #83	---	---	69.8	56.3	120	36 +	4	2
SY Miskin	---	---	69.6	57.1	120 -	35	4	4 +
MAS #65	---	---	69.6	55.6 -	120 -	32	2 -	0
VA16W-148	---	---	69.4	57.7 +	123 +	35	2	1
Dyna-Gro 9862	---	81.6	69.3	56.8	122 +	33	2 -	2
AgriMAXX 485	---	---	69.2	56.4	122 +	33	2	2
Dyna-Gro 9811	77.9	80.9	69.2	56.7	119 -	36 +	1 -	0
#Bullet	78.6 +	86.2	68.9	56.1	122	37 +	3	1
Armor Nemesis	---	78.0	68.9	58.5 +	122	32	4	3 +
VA16W-104	---	---	68.9	55.5 -	121	33	3	0
GA08535-15LE29	---	---	68.9	58.6 +	120	35 +	4	2
VA16W-152	---	---	68.8	54.3 -	121	33	4	0
VA15W-130	---	---	68.7	56.6	121	34	2	0
13VA-FHB-DH131	---	---	68.7	58.4 +	121	34	4	2
13VTK128-75	---	---	68.7	57.0	122	29 -	1 -	1
USG 3429	---	---	68.5	58.3 +	122	32 -	4	4 +
MBX 18-A-237	---	---	68.2	57.2	117 -	36 +	4	0
VA16W-124	---	---	68.2	57.0	120 -	35	5 +	0
13VTK434-89	---	---	68.0	58.7 +	120 -	37 +	3	0
USG 3404	71.9	79.9	67.7	56.6	123 +	33	3	2
VA15W-131	---	---	67.6	57.5 +	121	34	2 -	0
MAS #7	77.0	80.6	67.5	56.0	123 +	35	3	1
MAS #84	---	---	67.3	56.1	120 -	32	6 +	4 +
Pioneer 26R36	68.3 -	78.1	67.3	57.4	122 +	34	3	6 +
L11550	76.4	77.9	67.0	55.8 -	123 +	34	4	1
15MDX20	---	---	66.7	55.4 -	121	32 -	3	1
SH 7200	70.8	74.9 -	66.6	57.3	120 -	35	6 +	1
15MDX18	---	---	65.8 -	57.6 +	122	31 -	2 -	3 +
12VTK10-156	---	---	65.7 -	54.3 -	122	33	5 +	1
TWS2616	---	---	65.7 -	55.0 -	120 -	33	5 +	3 +
USG 3118	73.3	74.6 -	65.6 -	57.7 +	119 -	31 -	3	0
MAS #85	---	---	65.5 -	57.5 +	123 +	34	3	4 +
DH13SRW021-70	---	---	65.5 -	55.6 -	121	31 -	3	0

Table 30. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern VA AREC in Warsaw, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Height (In)	Plant Lodging (0-9)	Powdery Mildew (0-9)
VA16W-28	---	---	65.3 -	57.2	123 +	33	2	0
VA15W-70	---	---	65.2 -	57.0	121	31 -	2	0
SH 7510	---	79.1	65.1 -	55.8 -	123 +	34	3	0
VA09MAS6-122-7-1	75.0	76.9 -	65.0 -	56.3	120	28 -	3	0
NC14-23372	---	---	65.0 -	59.6 +	122 +	35 +	4	0
MAS #61	75.0	77.2	64.8 -	54.7 -	120	32	6 +	1
SH 4400	65.6 -	75.1 -	64.7 -	56.8	123 +	35	2	5 +
DH13SRW025-14	---	---	64.4 -	55.1 -	118 -	29 -	3	1
NC13-21213	---	71.8 -	62.2 -	56.7	120 -	34	2	1
13VTK82-51	---	---	61.2 -	55.8 -	123 +	32	3	1
VA15W-92	---	---	61.2 -	54.1 -	120 -	32 -	3	1
NC13-20076	---	---	60.0 -	58.5 +	120 -	35	7 +	1
VA09MAS1-12-5-1-1	---	72.0 -	59.9 -	59.1 +	122	36 +	4	2
Armor ARW1762	---	---	59.8 -	58.0 +	122	37 +	2 -	2
15MDX5	---	---	58.6 -	58.0 +	118 -	33	6 +	0
VA09MAS1-12-5-1-3	---	74.8 -	58.3 -	58.1 +	122 +	35 +	3	0
Massey	51.7 -	51.2 -	55.7 -	57.9 +	121	37 +	6 +	1
VA13W-174	67.8 -	68.1 -	54.4 -	53.7 -	118 -	34	1 -	0
GA061471-15LE38	---	---	52.4 -	57.4	122 +	35	4	1
Average	74.5	81.7	71.7	56.6	121	33	3	1
LSD (O.05)	3.9	4.7	5.5	0.8	1	1	1	1
C.V.	6.1	5.5	5.5	1.0	1	3	33	82

Released cultivars are shown in bold print. Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 31. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)		Test Weight (Lb/bu)		Powdery Mildew (0-9)	
VA16W-224	---		---		97.7	+	55.8		1	-
Armor ARW1766	---		---		97.3	+	57.4		2	
MBX 17-P-275	---		73.8		94.3	+	53.8	-	4	+
13VTK429-3	---		---		93.8	+	59.7	+	1	-
13VTK59-148	---		---		93.2	+	60.6	+	1.5	-
VA16W-202	---		---		92.2	+	54.4		1	-
CROPLAN 8415	65.0	+	74.6		92.1	+	57.3		2	
SY Viper	60.4		70.3		91.4	+	59.3	+	1.75	
Shirley	60.4		75.6	+	90.5	+	56.9		1	-
VA16W-148	---		---		89.1	+	56.2		1	-
MAS #86	---		---		88.7	+	55.7		2.5	
VA12W-68	66.7	+	76.9	+	88.7	+	55.6		2.5	
Luisa	---		---		88.5	+	58.6		1.25	-
AgriMAXX 474	62.2		70.3		88.1	+	53.9	-	2.5	
#Blaze	---		68.7		88.0	+	56.5		2	
L11719	---		---		87.7		56.7		1.25	-
VA16W-29	---		---		87.6		55.9		0.75	-
USG 3118	65.9	+	74.7		87.3		57.1		0.75	-
PGX 16-7	66.4	+	76.3	+	87.0		56.0		1.75	
AgriMAXX 463	---		75.3	+	86.6		56.0		4.5	+
WX17775	---		---		86.5		55.8		4.75	+
Featherstone 73	55.3		63.5	-	86.2		59.9	+	3.75	+
DH12SRW056-058	---		70.0		86.1		58.4		3.25	
13VTK434-89	---		---		86.0		59.1	+	1.25	-
DH13SRW023-201	---		---		86.0		62.0	+	0.75	-
SH 7200	62.0		72.9		85.9		58.8		2.5	
PGX 17-16	---		---		85.8		57.5		1.75	
AgriMAXX Exp 1874	---		---		85.5		55.4		2.5	
PGX 17-20	---		---		85.4		57.0		2.75	
VA15W-63	---		73.4		85.3		57.5		2.25	
Hilliard	66.2	+	76.5	+	85.2		57.2		1.5	-
DH12SRW057-006	---		66.8		85.1		58.7		1	-
USG 3329	---		---		85.1		57.7		2.5	
USG 3228	---		72.8		85.0		55.0		4.5	+
SY 547	58.8		68.7		84.9		57.2		1.25	-
VA16W-105	---		---		84.9		54.0	-	2.25	
AgriMAXX 480	---		---		84.7		57.3		1	-
USG 3316	48.7	-	60.9	-	84.4		53.6	-	5.25	+
CROPLAN SRW 9606	---		68.8		84.3		54.7		3.25	
MAS #116	---		77.8	+	84.1		57.0		2.25	
12VTK15-148	---		---		83.9		56.6		1	-

Table 31. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)	Test Weight (Lb/bu)		Powdery Mildew (0-9)	
VA16W-104	---		---		83.7	57.1		1.5	-
Dyna-Gro 9811	67.1	+	77.0	+	83.7	56.9		2.25	
AgriMAXX Exp 1892	---		---		83.6	58.3		2	
MAS #87	---		---		83.5	56.6		4.25	+
DH13SRW021-70	---		---		83.4	57.7		3	
VA15W-30	---		---		83.4	56.6		1.75	
MBX 18-A-237	---		---		83.4	56.4		1.25	-
VA15W-131	---		---		83.3	57.3		2.75	
LCS Ammo	---		---		83.1	56.2		2	
L11550	65.0	+	75.1	+	83.0	56.3		2.75	
MBX 17-M-245	---		68.5		83.0	53.6	-	1.75	
L11551	---		---		82.8	57.2		1.25	-
DH12SRW057-081	---		---		82.6	58.7		4.25	+
Armor ARW1719	---		---		82.5	56.4		4.25	+
VA15W-67	---		---		82.5	59.2	+	1.5	-
GA08535-15LE29	---		---		82.4	59.6	+	3	
Dyna-Gro 9750	---		72.6		82.4	55.0		4.5	+
MAS #316	---		67.0		81.8	56.3		3	
USG 3197	60.8		71.8		81.8	53.8	-	3.5	+
MAS #7	57.9		65.2		81.6	57.0		2.25	
13VA-FHB-DH252	---		---		81.5	58.6		2.25	
13VTK82-51	---		---		81.4	56.3		2.75	
VA16W-196	---		---		81.3	56.8		2	
DH13SRW021-80	---		---		81.1	57.5		0.5	-
VA15W-68	---		---		81.1	58.2		1.25	-
TWS2818	---		---		81.1	57.1		4	+
CROPLAN 8550	61.8		72.5		81.1	56.2		2.5	
15MDX18	---		---		81.1	57.2		2.75	
Armor ARW1716	---		---		81.0	59.0		2	
DH13SRW025-14	---		---		80.9	55.2		1.25	-
#Warrior	---		68.1		80.8	55.6		3	
USG 3458	---		68.7		80.7	55.2		2.75	
VA09MAS2-131-6-2	---		75.1	+	80.6	56.5		1.5	-
MAS #83	---		---		80.6	56.2		3.25	
USG 3895	61.3		72.9		80.6	55.1		3.75	+
13VTK128-75	---		---		80.1	56.4		3.25	
#Boss	---		62.7	-	80.0	54.3		2.75	
VA16W-31	---		---		80.0	59.0		2	
MBX 14-S-210	59.2		70.0		79.7	56.7		5	+
VA15W-91	---		---		79.6	57.5		1.25	-
VA16W-124	---		---		79.4	57.1		2.25	

Table 31. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)	Test Weight (Lb/bu)		Powdery Mildew (0-9)	
Pioneer 26R59	63.7	+	70.8		79.4	55.4		1.5	-
VA16W-229	---		---		79.4	56.0		1.75	
MAS #65	---		---		79.4	55.5		2.75	
VA16W-149	---		---		79.4	55.2		2.5	
DH11SRW066-153	---		---		79.3	59.0		1.75	
AgriMAXX 415	57.6		66.9		79.2	58.7		3.75	+
AgriMAXX 473	---		77.4	+	78.9	55.9		1.75	
USG 3536	---		77.0	+	78.9	55.6		2.5	
#Turbo	---		63.5	-	78.7	57.0		1.75	
SH 4300	48.8	-	58.4	-	78.6	51.2	-	4.5	+
Dyna-Gro 9772	59.1		71.3		78.5	54.6		3	
13VA-FHB-DH131	---		---		78.2	58.1		3.25	
SH 7510	---		71.7		77.9	54.7		3	
VA09MAS2-131-6-2-4	---		74.9	+	77.9	56.0		1.5	-
VA16W-152	---		---		77.7	55.2		2	
Armor Mayhem	---		74.4		77.4	56.6		2	
12VTK10-156	---		---		77.3	56.8		2.25	
TWS2616	---		---		77.2	56.2		4.25	+
VA16W-28	---		---		77.0	57.5		1.25	-
VA15W-130	---		---		77.0	57.9		1.5	-
VA09MAS1-12-5-1-3	---		70.7		76.9	57.7		3	
Armor Riptide	---		63.5	-	76.8	55.3		2.5	
15MDX20	---		---		76.4	56.7		2.5	
Pioneer 26R45	---		70.9		76.4	56.2		3.25	
USG 3404	55.1		64.7		76.3	55.1		3.25	
MAS #84	---		---		76.0	57.0		3.75	+
NC14-23372	---		---		75.9	60.9	+	0.75	-
AgriMAXX 444	53.7	-	63.6	-	75.8	54.9		3.5	+
MAS #61	63.0	+	72.0		75.8	56.3		4	+
#Bullet	61.5		72.6		75.6	54.7		2.5	
AgriMAXX 486	---		---		75.4	56.0		2.75	
USG 3429	---		---		75.3	57.2		5.75	+
CROPLAN SRW 9415	---		64.5		75.3	56.0		4	+
AgriMAXX 446	51.9	-	59.9	-	75.2	56.0		3.5	+
VA15W-70	---		---		75.2	56.1		0.75	-
Pioneer 26R41	57.6		69.0		75.2	54.5		2.25	
AgriMAXX 485	---		---		75.2	55.9		4	+
VA09MAS1-12-5-1-1	---		70.8		75.0	57.6		3.5	+
GA061471-15LE38	---		---		74.9	58.3		3.25	
Pioneer 26R10	51.9	-	59.1	-	74.8	56.7		3.5	+
Dyna-Gro 9600	56.7		66.6		74.5	54.7		3	

Table 31. Summary of performance of entries in the Virginia Tech Wheat Test, Eastern Shore AREC, Painter, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)		Test Weight (Lb/bu)		Powdery Mildew (0-9)	
VA09MAS6-122-7-1	64.3	+	73.9		74.3		57.1		1.25	-
NC13-21213	---		65.0		74.2		56.7		1.5	-
Dyna-Gro 9522	53.1	-	62.3	-	73.9		55.8		3.25	
DH11SRW069-70	---		71.5		73.4		53.8	-	2.75	
VA15W-92	---		---		73.1	-	54.4		1.25	-
Dyna-Gro 9701	---		74.6		73.1	-	57.2		2.75	
VA12W-31	58.4		68.9		72.8	-	54.9		2	
Dyna-Gro 9862	---		60.0	-	71.9	-	57.8		4.25	+
TWS3418	---		---		71.9	-	57.8		3.5	+
VA13W-174	58.7		69.0		71.8	-	53.4	-	1	-
15MDX5	---		---		71.4	-	59.9	+	1.25	-
SY Miskin	---		---		70.8	-	56.7		4.25	+
Armor Nemesis	---		67.6		67.9	-	57.2		6	+
Pioneer 26R36	52.4	-	61.7	-	67.8	-	54.2	-	6.25	+
NC13-20076	---		---		67.6	-	59.7	+	2	
SH 4400	44.8	-	53.0	-	67.6	-	53.8	-	5.5	+
Armor ARW1762	---		---		66.7	-	54.5		3.75	+
Massey	40.2	-	44.8	-	64.4	-	57.7		1.5	-
MAS #85	---		---		64.3	-	57.0		6.75	+
Average	58.5		69.2		80.6		56.6		2.6	
LSD (O.05)	4.2		5.5		7.3		2.4		0.8	
C.V.	8.8		8.1		6.5		3.1		23.5	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 32. Summary of performance of entries in the Virginia Tech Wheat Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)		Test Weight (Lb/bu)		Powdery Mildew (0-9)
13VTK59-148	---		78.4	+	56.8	+	1
AgriMAXX 480	---		77.0	+	56.7	+	0
SY Viper	70.2	+	75.7	+	55.6	+	2
MBX 18-A-237	---		73.7	+	56.3	+	1
#Blaze	69.8	+	73.4	+	53.4		2
VA16W-202	---		73.3	+	53.1		0
L11719	---		73.2	+	55.7	+	1
USG 3429	---		72.5	+	55.7	+	5
MAS #116	66.7		71.9		53.2		1
VA16W-224	---		71.6		53.9		1
USG 3458	71.1	+	71.4		52.3	-	3
VA09MAS1-12-5-1-3	71.7	+	70.8		55.1		1
13VTK429-3	---		70.7		54.5		1
L11551	---		70.5		55.5	+	1
VA16W-148	---		70.4		53.6		1
Dyna-Gro 9811	67.1		70.2		53.7		1
USG 3118	64.9		69.8		55.2		0
VA09MAS2-131-6-2-4	66.0		69.6		53.9		0
USG 3197	64.2		69.5		54.5		3
VA09MAS1-12-5-1-1	69.2	+	69.5		57.5	+	2
DH11SRW069-70	64.5		69.0		53.7		4
USG 3895	63.8		68.9		52.3	-	4
MAS #86	---		68.8		52.2	-	1
13VTK128-75	---		68.5		53.3		2
VA12W-68	61.7		68.4		55.1		1
AgriMAXX Exp 1892	---		68.4		57.2	+	1
VA16W-124	---		68.3		55.2		1
SH 7200	64.2		68.3		55.0		2
Pioneer 26R41	63.1		68.1		53.3		1
SY Miskin	---		68.0		55.1		3
AgriMAXX 486	---		68.0		53.3		2
SH 4300	64.6		68.0		52.8	-	3
VA16W-152	---		67.9		52.8		1
Armor ARW1716	---		67.8		57.1	+	1
Pioneer 26R10	65.7		67.7		53.3		3
VA09MAS2-131-6-2	62.2		67.5		54.7		1
NC13-21213	56.9	-	67.5		55.9	+	0
MAS #87	---		67.4		52.1	-	2
12VTK10-156	---		67.4		53.2		1
CROPLAN SRW 9415	69.2	+	67.4		53.2		3
VA16W-104	---		67.2		53.6		1

Table 32. Summary of performance of entries in the Virginia Tech Wheat Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)		Powdery Mildew (0-9)
VA16W-149	---	67.0	53.6		1
DH12SRW057-081	---	66.9	56.2	+	1
Pioneer 26R59	66.5	66.8	52.9		1
MAS #316	66.7	66.7	52.8		3
MBX 14-S-210	67.1	66.7	53.6		3
Dyna-Gro 9750	63.3	66.7	51.8	-	3
DH13SRW025-14	---	66.6	54.1		1
VA12W-31	64.8	66.6	55.5	+	1
AgriMAXX 444	66.7	66.6	53.5		2
USG 3329	---	66.5	52.9		2
Armor ARW1766	---	66.4	54.0		1
NC13-20076	---	66.3	57.2	+	0
Armor ARW1719	---	66.3	51.9	-	2
SH 7510	67.6	66.2	52.5	-	3
SY 547	60.8	66.1	53.2		1
CROPLAN SRW 9606	67.2	66.1	53.0		3
USG 3316	64.5	65.9	53.4		6
AgriMAXX 473	64.6	65.6	53.4		1
DH12SRW057-006	64.0	65.3	57.6	+	1
AgriMAXX 463	62.2	65.3	51.0	-	4
VA16W-229	---	65.3	55.0		2
TWS3418	---	65.2	52.8		2
Luisa	---	65.2	57.1	+	1
CROPLAN 8415	65.2	65.2	55.0		0
VA15W-91	---	64.9	54.7		1
MAS #83	---	64.6	53.2		3
AgriMAXX 446	66.4	64.4	53.9		2
PGX 16-7	60.8	64.3	55.7	+	0
Featherstone 73	59.3	64.2	54.9		1
VA16W-196	---	64.2	53.0		2
USG 3536	60.9	64.0	53.0		1
VA15W-63	63.8	63.9	54.8		2
Hilliard	63.9	63.7	53.7		0
VA15W-68	---	63.4	56.1	+	0
VA15W-131	---	63.3	53.9		0
Pioneer 26R45	65.7	63.3	54.3		1
DH13SRW021-80	---	63.3	55.2		1
PGX 17-20	---	63.3	53.9		1
13VA-FHB-DH252	---	63.3	53.7		2
13VA-FHB-DH131	---	63.3	55.2		1
Dyna-Gro 9522	61.8	63.1	53.1		3

Table 32. Summary of performance of entries in the Virginia Tech Wheat Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Powdery Mildew (0-9)
DH11SRW066-153	---	63.1	56.7 +	0
NC14-23372	---	62.9	56.8 +	0
VA15W-67	---	62.9	56.2 +	2
AgriMAXX 474	66.9	62.7	51.7 -	2
Dyna-Gro 9862	63.5	62.7	53.1	3
TWS2616	---	62.7	53.0	2
DH13SRW023-201	---	62.5	59.3 +	0
Dyna-Gro 9772	58.4	62.5	52.1 -	2
Armor Nemesis	66.3	62.5	54.7	4
WX17775	---	62.4	52.0 -	2
VA15W-30	---	62.3	52.8	1
DH12SRW056-058	58.1	62.3	54.4	2
MAS #61	63.7	62.2	52.7 -	2
GA08535-15LE29	---	62.2	55.3 +	3
MAS #84	---	62.0	53.3	3
VA15W-130	---	62.0	55.1	2
VA15W-70	---	61.9	56.0 +	1
#Turbo	60.1	61.9	53.0	3
LCS Ammo	---	61.7	53.7	0
#Boss	59.3	61.7	52.3 -	3
MAS #7	64.5	61.7	52.3 -	1
15MDX20	---	61.6	54.4	0
MBX 17-P-275	59.2	61.6	51.7 -	3
Dyna-Gro 9701	62.4	61.4	53.0	1
VA16W-29	---	61.4	54.6	0
MAS #65	---	61.0	52.7 -	2
PGX 17-16	---	60.9	54.7	1
Shirley	63.9	60.9	53.7	0
12VTK15-148	---	60.7	54.2	0
Armor Riptide	61.4	60.5	51.3 -	2
GA061471-15LE38	---	60.4	55.4 +	2
15MDX18	---	60.4	55.8 +	0
AgriMAXX Exp 1874	---	60.1	51.3 -	1
USG 3228	59.1	60.1	51.9 -	2
MBX 17-M-245	68.2	59.8	52.4 -	2
13VTK434-89	---	59.8	56.1 +	1
VA09MAS6-122-7-1	53.1 -	59.8	55.7 +	1
VA16W-105	---	59.6	52.0 -	1
TWS2818	---	59.5	52.7 -	2
L11550	62.1	59.4	51.7 -	1
#Bullet	61.3	59.3	52.7 -	0

Table 32. Summary of performance of entries in the Virginia Tech Wheat Test, Southern Piedmont AREC, Blackstone, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)		Test Weight (Lb/bu)		Powdery Mildew (0-9)
SH 4400	58.4		58.5		53.0		4
DH13SRW021-70	---		58.4		53.0		1
AgriMAXX 415	62.2		58.3		55.7	+	3
MAS #85	---		58.3		53.8		6
CROPLAN 8550	61.4		58.2		52.6	-	1
13VTK82-51	---		58.2		55.6	+	2
VA13W-174	61.2		58.1		54.9		0
VA15W-92	---		57.9		53.6		0
USG 3404	60.5		57.7		53.3		1
AgriMAXX 485	---		57.7		52.4	-	3
VA16W-28	---		57.5		56.1	+	0
15MDX5	---		56.4		55.6	+	0
Pioneer 26R36	53.1	-	56.3		54.7		5
Dyna-Gro 9600	58.2		56.2	-	51.7	-	2
#Warrior	65.5		56.1	-	51.0	-	2
Armor Mayhem	59.0		55.6	-	52.2	-	0
Armor ARW1762	---		54.0	-	53.4		2
VA16W-31	---		52.8	-	55.5	+	1
Massey	45.9	-	48.5	-	53.6		1
Average	63.2		64.3		54.0		2
LSD (O.05)	5.4		8.0		1.2		---
C.V.	8.3		8.6		1.6		---

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 33. Summary of performance of entries in the Virginia Tech Wheat Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)		Yield (Bu/a)		Test Weight (Lb/bu)		Height (In)		Plant Lodging (0-9)	
AgriMAXX 415	94.2	+	86.2	+	52.1	+	36		5	
Armor Riptide	83.9		85.9	+	50.6		35		2	
MBX 17-M-245	91.7	+	85.3	+	50.4		35		4	
#Warrior	88.8		84.5	+	50.1		36		1	-
MAS #7	84.4		81.5	+	50.7		37		4	
Pioneer 26R36	92.5	+	80.8	+	51.4		34		6	
USG 3316	91.2	+	79.2		51.4		37		6	
Shirley	83.6		79.0		49.8		35		2	
USG 3404	92.7	+	78.8		50.1		36		1	-
Pioneer 26R59	83.0		77.9		52.4	+	34		1	-
SH 4300	80.1		77.8		49.0		36		2	
CROPLAN 8550	89.3		77.7		48.9		36		7	
AgriMAXX 444	89.8		77.4		50.2		35		4	
USG 3895	89.2		77.4		50.0		35		4	
SY 547	77.1		77.2		50.6		37		5	
L11719	---		77.1		50.8		32		7	
CROPLAN SRW 9415	92.7	+	76.9		52.1	+	37		3	
AgriMAXX 446	85.2		76.7		52.0		35		4	
VA09MAS2-131-6-2	83.4		76.6		50.4		34		3	
SH 4400	76.5		76.5		50.0		36		6	
MAS #65	---		76.5		50.1		34		5	
USG 3228	79.4		76.3		49.7		35		6	
DH13SRW021-70	---		76.3		50.6		35		4	
PGX 17-16	---		76.2		50.7		33		5	
#Bullet	88.6		75.7		49.4		35		6	
AgriMAXX 474	87.1		75.7		49.8		36		2	
13VTK82-51	---		75.5		52.2	+	35		5	
USG 3536	86.5		75.3		49.5		41	+	7	
PGX 16-7	84.6		75.2		50.4		36		6	
13VTK429-3	---		74.8		51.5		35		4	
Pioneer 26R41	81.5		74.7		50.3		33		3	
VA16W-148	---		74.5		50.8		35		6	
SY Viper	77.5		74.5		52.7	+	39		5	
VA16W-29	---		74.2		50.5		38		5	
Armor ARW1766	---		74.2		50.9		36		5	
MBX 14-S-210	81.2		74.1		50.2		38		5	
Dyna-Gro 9701	82.6		73.7		50.1		37		5	
VA09MAS2-131-6-2-4	80.3		73.4		50.4		34		4	
VA15W-130	---		73.1		50.1		35		6	
WX17775	---		72.8		49.2		35		5	
CROPLAN SRW 9606	86.8		72.6		50.1		36		3	

Table 33. Summary of performance of entries in the Virginia Tech Wheat Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)	Yield (Bu/a)	Test Weight (Lb/bu)		Height (In)	Plant Lodging (0-9)
Dyna-Gro 9600	80.9	72.6	46.3	-	36	5
#Turbo	80.5	72.4	51.4		35	7
Pioneer 26R45	81.3	72.3	51.6		35	5
MAS #86	---	72.2	48.8		39	3
VA15W-131	---	72.0	50.7		34	7
AgriMAXX 486	---	71.8	50.4		38	4
#Boss	74.1	71.7	47.5	-	35	5
Armor ARW1719	---	71.7	49.2		37	5
Dyna-Gro 9772	79.2	71.5	48.5	-	38	7
MAS #116	85.2	71.5	49.4		36	5
AgriMAXX 485	---	71.4	50.4		34	6
13VTK59-148	---	71.4	51.5		34	7
VA16W-28	---	71.4	50.1		34	4
VA13W-174	82.7	71.1	49.9		38	5
TWS3418	---	71.1	48.4	-	34	6
Pioneer 26R10	84.4	71.0	50.3		36	3
MAS #85	---	71.0	51.1		37	5
VA15W-63	78.8	70.8	50.8		35	4
VA12W-68	83.3	70.8	50.6		34	3
DH12SRW056-058	77.5	70.8	50.6		36	6
USG 3329	---	70.8	48.1	-	36	5
Dyna-Gro 9862	82.0	70.7	50.7		34	4
Armor Nemesis	76.9	70.7	51.0		36	7
Armor ARW1762	---	70.7	50.9		37	3
VA16W-202	---	70.5	49.1		33	6
USG 3197	80.3	70.5	48.2	-	34	4
AgriMAXX Exp 1874	---	70.4	49.3		35	5
VA16W-105	---	70.4	49.3		36	7
MAS #87	---	70.3	49.1		35	6
DH11SRW066-153	---	69.9	51.4		38	6
15MDX20	---	69.8	50.4		36	6
USG 3458	84.5	69.5	49.3		36	5
AgriMAXX 473	80.8	69.5	49.5		33	7
Dyna-Gro 9522	77.4	68.2	49.5		37	7
L11550	79.1	68.2	50.6		35	7
12VTK15-148	---	67.8	48.7	-	35	4
VA15W-68	---	67.6	50.1		36	6
TWS2818	---	67.5	50.3		37	4
SY Miskin	---	67.2	50.7		37	6
CROPLAN 8415	78.6	67.0	50.8		36	7
13VA-FHB-DH252	---	66.9	52.6	+	37	4

Table 33. Summary of performance of entries in the Virginia Tech Wheat Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)		Yield (Bu/a)	Test Weight (Lb/bu)		Height (In)		Plant Lodging (0-9)
Featherstone 73	70.7	-	66.8	51.2		36		8
SH 7510	86.2		66.7	50.9		37		6
DH13SRW025-14	---		66.6	51.9		35		8
AgriMAXX 463	80.2		66.3	49.2		35		7
VA16W-224	---		66.2	48.8		39	+	2
VA16W-104	---		65.7	48.8		35		6
AgriMAXX Exp 1892	---		65.7	52.5	+	31	-	4
Armor Mayhem	78.6		65.6	49.2		39		7
DH12SRW057-006	79.6		64.9	53.3	+	33		3
NC13-21213	73.3		64.8	51.6		34		8
MAS #61	81.2		64.8	49.2		33		4
PGX 17-20	---		64.6	51.3		37		4
DH12SRW057-081	---		64.6	52.0		36		8
VA15W-30	---		64.3	49.5		37		7
VA16W-149	---		64.2	49.0		36		4
VA15W-91	---		63.9	49.2		35		5
Armor ARW1716	---		63.9	51.8		33		4
VA09MAS1-12-5-1-3	78.6		63.7	52.3	+	35		7
VA16W-196	---		63.5	49.5		37		5
#Blaze	76.1		63.5	48.6	-	36		8
MAS #83	---		63.5	48.7	-	34		5
L11551	---		63.1	51.6		35		5
MAS #84	---		62.8	50.7		34		7
DH11SRW069-70	76.3		62.7	46.6	-	35		6
Dyna-Gro 9811	77.3		62.6	50.3		35		5
13VTK128-75	---		62.5	48.3	-	36		6
VA16W-152	---		62.2	49.5		35		5
Hilliard	75.4		62.2	50.3		35		4
VA16W-31	---		62.2	50.5		37		2
12VTK10-156	---		62.1	50.2		35		4
VA16W-124	---		62.1	50.6		34		7
VA16W-229	---		62.0	50.0		35		5
Luisa	---		61.6	52.8	+	35		4
GA08535-15LE29	---		61.6	51.9		38		6
VA15W-70	---		61.6	50.6		34		3
VA12W-31	84.9		61.6	52.2	+	37		7
MAS #316	75.8		60.6	50.5		36		6
DH13SRW023-201	---		60.6	55.5	+	37		6
VA15W-92	---		60.6	49.4		34		7
Dyna-Gro 9750	79.3		60.5	49.2		36		8
VA09MAS1-12-5-1-1	83.9		60.5	53.2	+	36		5

Table 33. Summary of performance of entries in the Virginia Tech Wheat Test, Northern Piedmont Center, Orange, VA, 2018 harvest.

Line	2-year Av. Yield (Bu/a)		Yield (Bu/a)		Test Weight (Lb/bu)		Height (In)		Plant Lodging (0-9)
MBX 17-P-275	78.0		60.4		48.7	-	32	-	7
15MDX18	---		60.3		50.7		35		4
13VTK434-89	---		59.1		50.9		35		5
VA09MAS6-122-7-1	69.1	-	58.5		50.2		35		4
NC13-20076	---		58.5		51.7		35		5
13VA-FHB-DH131	---		58.3		52.8	+	36		6
VA15W-67	---		58.0		50.0		36		3
SH 7200	67.4	-	57.9		51.3		37		3
USG 3429	---		57.8		46.9	-	33		6
MBX 18-A-237	---		57.4		51.9		34		7
AgriMAXX 480	---		57.0		52.2	+	36		8
15MDX5	---		56.8		52.0		34		7
TWS2616	---		56.2	-	49.4		36		5
GA061471-15LE38	---		55.6	-	51.4		38		6
USG 3118	65.1	-	53.0	-	50.6		31	-	6
LCS Ammo	---		52.5	-	50.5		33		4
Massey	56.7	-	51.6	-	49.9		38		7
NC14-23372	---		50.8	-	52.0	+	37		5
DH13SRW021-80	---		50.3	-	51.0		33		6
Average	81.2		68.4		50.4		35.4		5.0
LSD (O.05)	8.8		11.9		1.6		3		4
C.V.	10.5		11.6		2.1		7		53

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 34. Summary of performance of entries in the Virginia Tech Wheat Test, Kentland farm, Blacksburg, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)
DH12SRW056-058	---	87.6	93.2 +	56.3	131	37 +	3
PGX 17-20	---	---	92.9 +	55.6	132	35	3
L11719	---	---	92.7 +	57.2 +	132	33	3
Dyna-Gro 9772	88.3	90.5	92.6 +	54.1 -	131	36	2
PGX 17-16	---	---	91.7 +	56.1	132	37 +	1
AgriMAXX Exp 1892	---	---	91.5 +	58.0 +	130 -	32 -	2
13VTK429-3	---	---	90.6 +	56.5 +	131	34	4
PGX 16-7	89.4	89.7	90.5 +	53.8 -	130	34	1
AgriMAXX Exp 1874	---	---	90.1 +	55.8	129 -	35	1
USG 3197	84.5	84.4	89.4 +	54.2 -	131	35	3
AgriMAXX 486	---	---	88.7 +	56.1	133 +	36	5
VA09MAS1-12-5-1-1	---	87.0	88.1 +	58.1 +	132	35	5
MAS #87	---	---	88.1 +	54.6	131	34	3
MBX 14-S-210	92.0 +	91.8	87.9	55.8	132	36	2
MAS #316	---	88.3	87.4	55.6	133 +	34	6
MAS #86	---	---	87.4	54.3 -	132	36	3
VA12W-68	85.9	85.0	87.1	54.4 -	130 -	34	2
USG 3536	---	89.9	87.0	54.9	131	36	4
DH13SRW025-14	---	---	86.8	56.7 +	128 -	32 -	2
AgriMAXX 473	---	92.1	86.7	54.9	132	36	4
AgriMAXX 446	85.5	87.3	86.4	56.2	132	34	1
Armor ARW1766	---	---	86.4	55.9	129 -	37 +	1
CROPLAN SRW 9415	---	88.8	86.2	56.0	133 +	35	1
DH13SRW023-201	---	---	86.1	60.8 +	133 +	35	1
13VTK82-51	---	---	85.6	55.6	133 +	33	6
USG 3895	84.6	84.2	85.3	55.0	132	34	1
VA12W-31	90.4 +	91.0	85.3	54.9	131	34	5
VA16W-105	---	---	84.8	52.5 -	132	35	6
AgriMAXX 415	87.8	88.8	84.7	56.9 +	131	35	2
Armor Mayhem	---	91.8	84.7	54.5	132	37 +	1
VA15W-91	---	---	84.5	55.7	132	33	3
WX17775	---	---	84.5	54.1 -	131	34	2
VA09MAS1-12-5-1-3	---	84.1	83.8	57.2 +	132	36	7 +
MAS #61	88.4	86.5	83.4	55.2	129 -	33	5
CROPLAN 8550	91.4 +	92.3	83.1	55.2	132	37 +	1
MAS #116	---	90.0	82.9	55.0	132	36	2
Armor ARW1719	---	---	82.7	54.1 -	131	34	5
VA16W-124	---	---	82.1	56.4 +	131	36 +	5
Armor ARW1716	---	---	82.1	57.4 +	130 -	33	3
AgriMAXX 480	---	---	82.0	56.6 +	127 -	34	6
VA16W-229	---	---	81.9	53.6 -	130 -	32 -	3

Table 34. Summary of performance of entries in the Virginia Tech Wheat Test, Kentland farm, Blacksburg, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)
Pioneer 26R10	85.5	86.6	81.6	54.5	132 +	35	2
VA09MAS6-122-7-1	83.3	81.2	81.6	55.2	130 -	31 -	4
#Bullet	87.9	90.6	81.4	54.0 -	133 +	36	7 +
SH 4300	75.9 -	75.2 -	81.2	52.1 -	130	35	5
13VTK434-89	---	---	80.5	57.5 +	132	37 +	5
L11550	83.5	81.3	80.3	54.7	132	34	3
13VA-FHB-DH131	---	---	80.1	57.8 +	129 -	33	7 +
DH13SRW021-80	---	---	79.9	56.1	132	32 -	7 +
12VTK10-156	---	---	79.6	54.3 -	132	34	8 +
Luisa	---	---	79.3	57.3 +	131	36 +	4
SH 7200	80.7	80.6	79.2	56.6 +	131	35	3
15MDX20	---	---	79.1	54.3 -	133 +	34	4
SH 7510	---	83.2	79.0	54.9	132	34	3
Hilliard	87.5	84.9	78.9	54.9	132	36	1
USG 3316	73.7 -	76.0 -	78.6	56.1	131	35	1
DH11SRW066-153	---	---	78.6	58.9 +	132 +	36	2
TWS2616	---	---	78.5	55.0	128 -	35	7 +
Dyna-Gro 9701	---	85.2	78.5	54.2 -	132	36	5
Dyna-Gro 9811	83.7	81.4	78.3	54.3 -	131	36	3
VA15W-92	---	---	78.2	54.0 -	130	33	6
AgriMAXX 444	82.4	83.3	78.1	54.6	132	35	2
LCS Ammo	---	---	78.1	53.9 -	133 +	34	5
DH11SRW069-70	---	84.4	78.0	53.6 -	133 +	34	5
Dyna-Gro 9600	84.0	83.7	77.7	51.8 -	131	35	0 -
USG 3329	---	---	77.4	54.7	131	35	7 +
CROPLAN SRW 9606	---	84.6	77.4	54.6	130	35	2
Pioneer 26R41	84.2	84.3	77.4	55.0	133 +	34	1
L11551	---	---	76.9	55.1	133 +	32 -	5
USG 3404	80.2	80.1	76.6	54.1 -	133 +	34	3
MBX 18-A-237	---	---	76.6	56.9 +	127 -	34	3
#Blaze	---	79.8	76.0	53.4 -	131	35	8 +
#Boss	---	78.9	75.9	51.2 -	130 -	33	1
MAS #83	---	---	75.9	53.9 -	132	35	3
Dyna-Gro 9522	77.7 -	79.1	74.3	54.3 -	132	36	3
SY Miskin	---	---	73.4 -	55.1	130 -	35	3
VA13W-174	73.6 -	74.5 -	73.2 -	54.7	131	36	4
VA16W-104	---	---	73.0 -	54.1 -	131	35	1
VA15W-30	---	---	72.2 -	53.7 -	132 +	34	7 +
15MDX18	---	---	70.0 -	55.9	133 +	32 -	4
GA08535-15LE29	---	---	69.5 -	57.0 +	133 +	36 +	2
Pioneer 26R36	69.5 -	67.4 -	69.1 -	54.6	132	36	5

Table 34. Summary of performance of entries in the Virginia Tech Wheat Test, Kentland farm, Blacksburg, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)
GA061471-15LE38	---	---	68.5 -	57.4 +	133 +	37 +	6
13VA-FHB-DH252	---	---	66.2 -	57.4 +	133 +	37 +	7 +
NC14-23372	---	---	66.1 -	58.0 +	133 +	35	3
15MDX5	---	---	59.2 -	56.8 +	130 -	33	7 +
NC13-20076	---	---	57.4 -	55.8	132	34	6
#Turbo	*	*	*	55.4	129 -	32 -	3
#Warrior	*	*	*	54.6	129 -	34	2
12VTK15-148	*	*	*	56.0	131	35	0 -
13VTK128-75	*	*	*	54.9	131	32 -	6
13VTK59-148	*	*	*	56.1	131	34	6
AgriMAXX 463	*	*	*	53.9 -	131	33	5
AgriMAXX 474	*	*	*	54.7	129 -	33	2
AgriMAXX 485	*	*	*	56.6 +	132	35	5
Armor ARW1762	*	*	*	56.4 +	132	34	2
Armor Nemesis	*	*	*	55.8	132	32 -	5
Armor Riptide	*	*	*	54.8	129 -	35	1
CROPLAN 8415	*	*	*	53.1 -	131	36	7 +
DH12SRW057-006	*	*	*	58.9 +	132	30 -	2
DH12SRW057-081	*	*	*	56.6 +	131	32 -	6
DH13SRW021-70	*	*	*	56.3	130 -	33	5
Dyna-Gro 9750	*	*	*	53.5 -	132	34	6
Dyna-Gro 9862	*	*	*	56.5 +	132	34	4
Featherstone 73	*	*	*	56.0	133 +	33	5
MAS #65	*	*	*	55.0	129 -	36	1
MAS #7	*	*	*	55.6	132	36	3
MAS #84	*	*	*	53.8 -	129 -	34	6
MAS #85	*	*	*	55.1	132	36	5
Massey	*	*	*	55.2	132 +	37 +	6
MBX 17-M-245	*	*	*	55.7	129 -	32 -	1
MBX 17-P-275	*	*	*	53.7 -	131	33	3
NC13-21213	*	*	*	54.7	132	35	5
Pioneer 26R45	*	*	*	54.9	132	33	4
Pioneer 26R59	*	*	*	55.6	130 -	32 -	2
SH 4400	*	*	*	55.6	132	36	3
Shirley	*	*	*	53.1 -	132	34	1
SY 547	*	*	*	55.9	131	35	1
SY Viper	*	*	*	56.5 +	130 -	38 +	6
TWS2818	*	*	*	56.7 +	132	34	4
TWS3418	*	*	*	56.2	133 +	34	7 +
USG 3118	*	*	*	55.1	129 -	33	4
USG 3228	*	*	*	53.6 -	131	32 -	4

Table 34. Summary of performance of entries in the Virginia Tech Wheat Test, Kentland farm, Blacksburg, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	Date Headed (Julian)	Mature Height (In)	Plant Lodging (0-9)
USG 3429	*	*	*	55.6	132	34	4
USG 3458	*	*	*	54.7	129 -	34	2
VA09MAS2-131-6-2	*	*	*	55.5	129 -	29 -	1
VA09MAS2-131-6-2-4	*	*	*	54.6	131	30 -	2
VA15W-130	*	*	*	54.9	132	34	3
VA15W-131	*	*	*	55.5	132	35	2
VA15W-63	*	*	*	56.2	131	33	1
VA15W-67	*	*	*	57.0 +	132	35	2
VA15W-68	*	*	*	57.1 +	131	34	1
VA15W-70	*	*	*	56.7 +	130	33	2
VA16W-148	*	*	*	56.9 +	132 +	35	2
VA16W-149	*	*	*	53.4 -	132	34	4
VA16W-152	*	*	*	54.5	131	35	6
VA16W-196	*	*	*	55.3	133 +	32 -	4
VA16W-202	*	*	*	53.5 -	130 -	33	6
VA16W-224	*	*	*	53.7 -	132	36 +	1
VA16W-28	*	*	*	56.9 +	132	34	1
VA16W-29	*	*	*	56.3	132	36	2
VA16W-31	*	*	*	57.0 +	131	32 -	1
Average	87.6	88.7	88.0	55.7	131	35	3
LSD (O.05)	5.9	8.2	6.9	1.0	1	2	3
C.V.	8.2	10.2	6.1	1.3	1	4	62

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

*Varieties were fed upon by deer and their yields significantly reduced.

Table 35. Summary of performance of entries in the Virginia Tech Wheat Test, planted No-Till at Tidewater AREC, Holland, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)
VA16W-124	---	---	77.3 +	53.4
MAS #84	---	---	76.3 +	53.5
Pioneer 26R59	61.5 +	62.5 +	73.7 +	52.3
TWS3418	---	---	72.3	52.7
DH13SRW021-70	---	---	72.0	53.0
SH 4300	57.9	60.6	71.8	52.1 -
L11550	58.1	58.9	71.3	51.8 -
VA16W-149	---	---	69.9	53.7
USG 3329	---	---	69.7	52.2 -
VA15W-30	---	---	69.7	52.8
AgriMAXX 446	57.6	62.7 +	69.5	53.8
MAS #83	---	---	69.5	53.1
DH12SRW056-058	---	58.1	69.2	55.1 +
Luisa	---	---	68.7	56.4 +
USG 3316	58.1	65.0 +	68.5	51.0 -
MBX 17-P-275	---	56.1	68.4	51.8 -
#Warrior	---	51.2	68.3	52.0 -
AgriMAXX 486	---	---	68.1	53.0
VA12W-31	56.4	54.8	68.0	54.5
DH11SRW069-70	---	52.0	67.8	53.5
MBX 14-S-210	57.7	61.7	67.8	53.1
13VTK429-3	---	---	67.6	54.3
USG 3429	---	---	67.6	55.1 +
VA09MAS2-131-6-2	---	57.3	67.6	53.2
USG 3404	57.4	62.7 +	67.5	53.3
AgriMAXX 480	---	---	67.4	56.6 +
VA16W-148	---	---	67.3	54.2
#Boss	---	55.3	67.3	52.1 -
DH13SRW021-80	---	---	67.2	51.9 -
MAS #316	---	57.7	67.0	53.7
MBX 17-M-245	---	57.9	67.0	52.1 -
USG 3458	---	57.5	66.7	52.5
DH12SRW057-081	---	---	66.3	55.7 +
VA16W-28	---	---	66.2	54.3
13VTK59-148	---	---	66.2	54.2
USG 3228	---	48.6	66.1	52.4
Pioneer 26R10	59.3	62.0 +	65.9	53.6
Dyna-Gro 9772	56.8	56.0	65.8	52.2 -
#Bullet	55.0	55.6	65.6	53.1
AgriMAXX 485	---	---	65.5	52.0 -
PGX 17-20	---	---	65.4	54.5

Table 35. Summary of performance of entries in the Virginia Tech Wheat Test, planted No-Till at Tidewater AREC, Holland, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)	Test Weight (Lb/bu)	
MAS #61	58.4		56.5		65.4	53.1	
Armor Nemesis	---		54.2		65.4	55.7	+
12VTK10-156	---		---		65.3	53.1	
TWS2818	---		---		65.2	52.8	
Armor ARW1766	---		---		65.1	53.3	
USG 3895	57.6		58.9		65.1	51.9	-
Dyna-Gro 9750	---		50.1		65.0	51.8	-
Pioneer 26R41	58.8		60.2		64.8	53.0	
MAS #87	---		---		64.7	52.6	
Armor Mayhem	---		59.3		64.7	52.6	
GA061471-15LE38	---		---		64.7	54.8	
Hilliard	57.1		57.5		64.5	52.1	-
SH 4400	53.4		59.3		64.2	53.3	
USG 3197	53.4		54.4		64.0	52.8	
AgriMAXX 474	50.9		49.0		64.0	52.5	
SY Viper	50.1		52.8		63.8	54.9	
13VTK82-51	---		---		63.8	54.5	
VA16W-202	---		---		63.4	52.1	-
Massey	47.0	-	49.7		63.3	56.1	+
L11719	---		---		63.3	52.5	
VA16W-229	---		---		63.3	54.0	
WX17775	---		---		63.1	51.8	-
AgriMAXX 415	56.0		58.0		63.0	55.1	+
SH 7200	54.8		56.4		62.7	55.2	+
13VTK128-75	---		---		62.6	52.6	
MAS #86	---		---		62.5	52.1	-
SY 547	56.1		54.6		62.5	54.1	
MAS #116	---		54.7		62.5	53.5	
VA16W-104	---		---		62.5	55.0	+
CROPLAN SRW 9606	---		56.9		62.4	53.1	
VA15W-91	---		---		62.4	54.0	
VA12W-68	56.3		56.3		62.2	53.0	
AgriMAXX 463	---		50.4		62.2	51.7	-
MAS #85	---		---		62.1	53.3	
Armor ARW1719	---		---		62.1	52.1	-
SY Miskin	---		---		62.1	55.2	+
PGX 17-16	---		---		61.9	54.3	
15MDX5	---		---		61.9	56.0	+
DH12SRW057-006	---		49.8		61.8	56.4	+
Armor Riptide	---		47.9	-	61.8	51.6	-
USG 3536	---		55.9		61.8	52.8	

Table 35. Summary of performance of entries in the Virginia Tech Wheat Test, planted No-Till at Tidewater AREC, Holland, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)		2-year Av. Yield (Bu/a)		Grain Yield (Bu/a)	Test Weight (Lb/bu)	
Pioneer 26R45	---		55.5		61.4	53.4	
15MDX20	---		---		61.4	52.6	
VA16W-224	---		---		61.2	53.0	
Featherstone 73	55.4		54.2		61.0	53.9	
VA09MAS1-12-5-1-1	---		54.0		61.0	56.6	+
MAS #65	---		---		60.9	51.7	-
AgriMAXX 473	---		56.8		60.9	52.8	
CROPLAN 8550	55.5		56.2		60.8	52.5	
MBX 18-A-237	---		---		60.7	57.3	+
L11551	---		---		60.7	54.9	
13VTK434-89	---		---		60.6	54.4	
PGX 16-7	55.0		53.8		60.6	53.1	
DH13SRW025-14	---		---		60.6	55.3	+
DH11SRW066-153	---		---		60.4	54.9	
DH13SRW023-201	---		---		60.4	57.7	+
Dyna-Gro 9701	---		53.4		60.2	53.1	
AgriMAXX Exp 1892	---		---		60.2	55.0	
13VA-FHB-DH131	---		---		60.2	54.8	
VA09MAS2-131-6-2-4	---		51.8		60.1	53.1	
GA08535-15LE29	---		---		59.9	54.3	
Pioneer 26R36	53.3		56.9		59.8	54.9	
VA09MAS6-122-7-1	50.6		49.2		59.7	55.2	+
13VA-FHB-DH252	---		---		59.6	54.9	
VA16W-152	---		---		59.5	52.2	-
Armor ARW1716	---		---		59.5	56.0	+
MAS #7	46.3	-	50.6		59.5	53.7	
USG 3118	52.7		51.9		59.4	54.1	
#Blaze	---		58.1		59.3	53.4	
LCS Ammo	---		---		58.9	53.6	
CROPLAN 8415	55.3		54.1		58.7	54.9	
VA15W-70	---		---		58.6	53.5	
AgriMAXX Exp 1874	---		---		58.6	53.5	
15MDX18	---		---		58.6	54.2	
VA15W-130	---		---		58.3	53.4	
CROPLAN SRW 9415	---		59.7		58.3	54.2	
SH 7510	---		55.8		58.1	52.4	
Dyna-Gro 9600	53.7		54.0		58.1	52.6	
NC13-21213	---		44.5	-	58.0	55.7	+
Dyna-Gro 9522	59.0		61.1		58.0	53.2	
AgriMAXX 444	56.9		59.4		57.9	53.5	
VA15W-131	---		---		57.8	54.9	

Table 35. Summary of performance of entries in the Virginia Tech Wheat Test, planted No-Till at Tidewater AREC, Holland, VA, 2018 harvest.

Line	3-year Av. Yield (Bu/a)	2-year Av. Yield (Bu/a)	Grain Yield (Bu/a)	Test Weight (Lb/bu)	
TWS2616	---	---	57.7	52.7	
Dyna-Gro 9811	55.1	52.0	57.0	52.6	
VA09MAS1-12-5-1-3	---	50.8	56.8	55.7	+
VA15W-67	---	---	56.6	53.7	
VA15W-63	---	53.7	56.5	53.0	
12VTK15-148	---	---	56.3	52.6	
VA16W-105	---	---	56.1	52.8	
Dyna-Gro 9862	---	43.2	- 55.9	52.7	
Shirley	52.2	52.0	55.4	53.2	
VA16W-196	---	---	55.4	52.6	
#Turbo	---	45.0	- 54.9	52.8	
NC13-20076	---	---	54.7	56.7	+
Armor ARW1762	---	---	54.4	54.0	
NC14-23372	---	---	54.3	55.3	+
VA13W-174	53.0	50.0	53.3	53.9	
VA16W-29	---	---	52.9	53.6	
VA15W-68	---	---	52.1	- 54.0	
VA15W-92	---	---	48.7	- 52.1	-
VA16W-31	---	---	48.6	- 54.0	
Average	55.3	55.1	62.6	53.6	
LSD (O.05)	5.6	6.8	10.5	1.3	
C.V.	11.6	11.8	11.4	1.7	

Released cultivars are shown in bold print.

Varieties are ordered by descending yield averages.

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

The 0-9 ratings indicate a genotype's response to disease or lodging where 0 = highly resistant and 9 = highly susceptible.

Table 36. Summary of performance of entries in the Virginia Tech Wheat Test, Shenandoah Valley in Rockingham County, VA, 2018 harvest.

Line	Grain Yield (Bu/a)		Test Weight (Lb/bu)		Cover (%)
USG 3228	42.9	+	48.4		93
MBX 17-P-275	41.6	+	48.5		86
USG 3197	41.0	+	46.0		88
Dyna-Gro 9750	37.3	+	48.7		84
DH12SRW057-081	34.6	+	50.3	+	86
VA09MAS2-131-6-2	33.6	+	48.0		94
MAS #7	32.5	+	46.1		93
AgriMAXX 463	31.7	+	49.0	+	85
MBX 14-S-210	31.4		49.0	+	85
AgriMAXX 480	31.3		48.9	+	89
Pioneer 26R36	31.0		48.4		88
MAS #116	30.9		50.5	+	67
AgriMAXX Exp 1892	30.7		51.5	+	88
SY Viper	30.3		46.2		85
USG 3316	30.3		50.0	+	69
AgriMAXX Exp 1874	30.1		45.4		87
Dyna-Gro 9772	30.0		46.6		80
DH13SRW025-14	29.9		49.3	+	85
Dyna-Gro 9862	29.5		46.5		79
MAS #86	29.4		47.3		83
Armor ARW1719	29.4		46.2		74
AgriMAXX 474	29.3		45.5		91
WX17775	28.8		48.0		86
AgriMAXX 485	28.7		47.4		90
VA16W-31	28.5		46.8		89
AgriMAXX 473	28.5		48.3		78
MAS #316	28.3		47.8		91
Dyna-Gro 9701	28.3		50.0	+	83
Luisa	28.3		48.8		90
Dyna-Gro 9600	28.2		45.2		85
DH12SRW056-058	27.7		48.6		81
#Turbo	27.7		47.5		79
USG 3458	27.5		43.7	-	88
Armor ARW1716	27.5		50.3	+	75
13VTK434-89	27.3		47.5		89
VA13W-174	27.1		48.2		83
MAS #84	27.1		48.1		95
MAS #65	27.0		45.2		86
MAS #61	26.8		45.9		81
TWS2818	26.8		47.7		83
Armor Riptide	26.8		45.5		65

Table 36. Summary of performance of entries in the Virginia Tech Wheat Test, Shenandoah Valley in Rockingham County, VA, 2018 harvest.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)		Cover (%)	
USG 3329	26.6	47.7		83	
13VTK128-75	26.5	46.3		95	
MBX 18-A-237	26.2	47.6		84	
VA16W-29	26.1	44.9		88	
CROPLAN 8550	26.1	48.2		84	
DH13SRW023-201	26.0	51.0	+	91	
PGX 16-7	26.0	45.6		86	
SH 4400	26.0	43.7	-	90	
Pioneer 26R59	25.9	45.7		79	
VA09MAS6-122-7-1	25.9	46.7		86	
#Bullet	25.7	47.4		81	
SY 547	25.7	45.4		85	
AgriMAXX 486	25.0	48.2		78	
VA12W-68	24.9	45.8		89	
VA16W-149	24.9	46.0		83	
TWS3418	24.9	46.0		78	
VA15W-68	24.8	44.6		81	
Dyna-Gro 9522	24.8	46.0		83	
MAS #87	24.7	46.7		79	
PGX 17-16	24.4	46.1		91	
12VTK15-148	24.4	44.5		80	
USG 3536	24.3	47.2		81	
DH13SRW021-70	24.2	47.0		91	
Pioneer 26R45	24.0	46.3		75	
MBX 17-M-245	23.9	44.2		90	
AgriMAXX 415	23.7	46.8		71	
TWS2616	23.6	47.3		81	
VA16W-148	23.2	44.8		75	
L11551	22.7	49.0	+	89	
AgriMAXX 444	22.6	46.4		85	
#Blaze	22.6	46.8		86	
VA15W-67	22.5	44.7		78	
Hilliard	22.4	45.0		86	
VA09MAS2-131-6-2-4	22.3	46.8		81	
VA16W-202	22.2	45.1		75	
VA16W-105	22.2	47.0		56	-
13VA-FHB-DH131	22.1	48.2		96	
#Warrior	22.1	44.2		73	
CROPLAN SRW 9606	22.1	46.4		76	
VA15W-91	21.9	46.5		91	
Dyna-Gro 9811	21.9	44.7		85	

Table 36. Summary of performance of entries in the Virginia Tech Wheat Test, Shenandoah Valley in Rockingham County, VA, 2018 harvest.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)		Cover (%)
SH 4300	21.7	46.1		84
Armor Mayhem	21.4	47.8		68
DH13SRW021-80	20.9	46.5		80
PGX 17-20	20.5	48.7		70
USG 3118	20.5	44.7		84
SH 7200	20.4	43.9	-	96
13VTK59-148	20.4	46.9		76
VA16W-124	20.1	48.2		81
Featherstone 73	20.1	46.1		86
15MDX20	20.1	46.3		79
VA15W-130	19.9	43.2	-	89
CROPLAN SRW 9415	19.8	46.1		83
NC13-21213	19.7	46.1		84
#Boss	19.6	44.1		89
VA16W-28	19.3	44.1		88
VA15W-63	19.1	45.5		79
USG 3429	19.0	49.2	+	89
VA09MAS1-12-5-1-1	18.8	47.2		85
VA15W-70	18.8	44.9		74
Shirley	18.7	42.4	-	85
VA16W-224	18.7	41.8	-	64
USG 3404	18.6	45.2		76
Armor ARW1762	18.6	44.2		75
13VTK429-3	18.6	48.2		70
L11719	17.9	46.5		90
DH12SRW057-006	17.8	46.6		83
Armor ARW1766	17.7	44.6		89
VA09MAS1-12-5-1-3	17.6	48.0		91
MAS #85	17.3	45.1		84
VA16W-152	17.3	44.5		79
NC14-23372	17.3	45.8		89
Pioneer 26R41	17.3	44.7		73
Pioneer 26R10	17.2	46.2		85
13VTK82-51	17.1	45.4		80
15MDX5	17.1	48.2		84
USG 3895	16.9	44.9		79
LCS Ammo	16.5	47.3		77
VA15W-30	16.3	44.3		79
VA12W-31	16.2	45.7		84
AgriMAXX 446	16.2	45.7		80
VA16W-196	15.9	45.7		68

Table 36. Summary of performance of entries in the Virginia Tech Wheat Test, Shenandoah Valley in Rockingham County, VA, 2018 harvest.

Line	Grain Yield (Bu/a)	Test Weight (Lb/bu)		Cover (%)
13VA-FHB-DH252	15.8	45.1		84
SY Miskin	15.8	45.7		66
GA061471-15LE38	15.7	46.8		71
Armor Nemesis	15.7	47.5		84
SH 7510	15.4	44.7		79
VA16W-229	15.1	41.9	-	84
VA15W-131	15.1	41.3	-	80
VA15W-92	15.0	44.1		90
15MDX18	14.4	49.6	+	71
Massey	14.3	46.6		88
DH11SRW066-153	14.0	45.6		84
L11550	14.0	45.5		86
NC13-20076	13.7	48.6		80
CROPLAN 8415	12.8	42.0	-	91
VA16W-104	11.4	---		78
MAS #83	11.2	42.7	-	76
12VTK10-156	10.5	46.3		65
DH11SRW069-70	10.1	42.9	-	85
GA08535-15LE29	6.2	---		79
Average	22.9	46.4		82
LSD (0.05)	8.6	2.4		19
C.V.	25.6	3.1		16

Released cultivars are shown in bold print. Varieties are ordered by descending yield averages.
A plus or minus sign indicates a performance significantly above or below the test average.

Section 4: Milling and Baking Quality

Grain samples of 54 entries in Virginia's 2017 State Wheat Test grown at Warsaw, VA were submitted to the USDA-ARS Soft Wheat Quality Lab in Wooster, OH for advanced milling and baking quality evaluations. Wheat cultivars and experimental lines (collectively referred to as "varieties" herein) are listed in Table 37 from highest to lowest T-scores for overall milling and baking quality. The soft red winter cultivar Shirley that has historically had good milling and pastry baking quality was used as the quality standard check and has an overall quality T-score of zero. Wheat cultivars or experimental lines with T-scores greater than zero have overall quality that is similar to or exceed that of Shirley, while those with T-scores less than zero have overall quality that is similar to or less than that of Shirley. Quality grades (A-F) were also assigned (see Tables below) for flour yield (a key indicator of milling quality) and cookie diameter (a key indicator of pastry baking quality) as varieties having good milling quality may or may not have good baking quality and vice versa.

Adjusted Flour Yield Grade (Based on Samples between 2009 and 2016)

Grade	Range	Percent
A	>70.78	15
B	69.64 to 70.78	20
C	68.15 to 69.63	30
D	66.75 to 68.14	20
F	<66.75	15

Cookie Diameter (Based on Samples Between 2009 and 2016)

Grade	Range	Percent
A	>19.24	15
B	18.82 to 19.24	20
C	18.32 to 18.82	30
D	17.87 to 18.32	20
F	<17.87	15

Additional Information on Quality Analysis

Of the quality characteristics measured at the Soft Wheat Quality Laboratory, flour milling yield is the most reproducible and perhaps most important because it is genetically and environmentally associated with good soft wheat flour quality. Flour yields of the 54 varieties ranged from 66.5% to 72.7% and 32 varieties had flour yields and grades (A-B) that were similar to or higher than that of Shirley (70.3%) the quality standard check (Table 30).

After flour yield, the second quality trait that we recommend for use in selection is softness equivalent. It tends to have high heritability and is an important predictor of milling break flour yield. Overall varieties had higher softness equivalence scores in 2017 (49.1 to 62.5) than in 2016 (43.6% to 60.0%). Higher values are preferred for most soft wheat manufactured goods, particularly cakes and other high sugar baked products. Softness equivalence scores of 26 varieties were similar to or higher than that of Shirley (55.5%).

Flour protein concentration of Shirley was 8.8% and the 54 varieties ranged from 7.6% to 10.2%. Gluten strength is measured as lactic acid Solvent Retention Capacity (SRC) and is also correlated to flour protein concentration, but the effect is dependent on variety and growing conditions. Weaker gluten strength is desired for most pastry products, such as cookies and cakes, while stronger gluten strength is desired in production of crackers and some bread type products. Lactic acid SRC values of seven varieties including Shirley (96.5%) were less than 100%, while the remaining 47 varieties had values ranging from 100% to 154% with a test average of 114%.

Pastry baking quality was assessed via measurement of sugar cookie spread diameter, which ranged from 17.4 to 18.9 cm with a test average of 18.0 cm that was 0.5 cm larger than that of varieties evaluated in 2016. Twenty-four of the 54 varieties had cookie spread diameters similar to or higher than that of Shirley (18.1 cm). Twenty-eight varieties had overall quality T-scores (0.04 to 1.31) that were similar to or higher than that of Shirley.

Table 37. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluation of the 2017 harvest.

Entry	Adjusted Flour Yield (%)	Adjusted Flour Yield % Grade	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Cookie Diameter (cm)	Cookie Diameter Grade	Total T-Score
VA09MAS6-122-7-1	72.3	A	56.9	9.4	113.2	18.7	C	1.31
VA09MAS6-122-7-1-1	72.1	A	58.7	8.9	111.7	18.9	B	1.20
Dyna-Gro 9522	71.7	A	59.4	7.9	113.9	18.6	C	1.06
CROPLAN SRW 9606	72.7	A	55.7	8.5	101.5	18.2	D	1.02
VA09MAS6-122-7-1-4	71.4	A	59.3	9.0	111.1	18.8	C	0.94
USG 3404	71.7	A	60.9	7.6	111.9	17.7	F	0.89
USG 3458	72.6	A	58.3	7.7	102.9	18.0	D	0.85
CROPLAN SRW 9415	71.5	A	59.5	8.4	110.3	18.2	D	0.79
AgriMAXX 444	71.3	A	60.0	8.2	114.8	18.3	D	0.75
AgriMAXX 446	71.1	A	58.1	8.4	112.8	18.1	D	0.72
USG 3895	71.5	A	58.7	8.1	97.7	18.3	D	0.68
AgriMAXX 474	72.1	A	57.8	8.3	98.5	17.9	F	0.65
VA09MAS1-12-5-1-3	71.2	A	52.3	9.2	108.5	18.3	C	0.58
VA09MAS1-12-5-1-1	70.9	A	53.5	9.3	111.6	18.2	D	0.57
Pioneer Brand 26R53	70.5	B	57.2	8.8	115.9	17.8	F	0.41
DH12SRW057-006	70.9	A	51.4	9.2	114.9	18.1	D	0.39
VA13W-38	69.1	C	53.5	10.2	126.7	17.8	F	0.32
AgriMAXX 415	70.5	B	54.3	8.6	120.8	18.6	C	0.30
Pioneer Brand 26R41	70.3	B	59.0	8.2	125.1	18.0	D	0.28
L11541	71.0	A	51.6	9.1	127.8	17.7	F	0.20
CROPLAN 8415	71.3	A	52.6	9.0	112.6	17.9	D	0.19
CROPLAN 8550	71.3	A	51.7	9.2	96.8	18.2	D	0.17
Pioneer Brand 26R59	70.7	B	56.2	8.0	103.4	18.0	D	0.17
Pioneer Brand 26R10	69.7	B	62.5	8.8	117.6	18.1	D	0.14
#Bullet	71.2	A	51.6	8.9	101.7	17.6	F	0.14
Dyna-Gro 9701	71.4	A	52.7	8.7	100.0	18.3	D	0.13
Dyna-Gro 9811	69.1	C	57.2	8.6	123.9	18.1	D	0.08
MBX 14-S-210	70.1	B	57.6	9.1	120.1	17.7	F	0.04
Shirley (Quality check)	70.3	B	55.0	8.8	96.5	18.1	D	0.00
USG 3536	70.8	B	51.6	9.4	97.1	18.0	D	-0.02
Hilliard	69.0	C	58.4	8.5	120.8	18.0	D	-0.06
DH12SRW056-058	69.6	C	54.7	9.8	153.8	17.4	F	-0.08
AgriMAXX 473	70.2	B	52.3	9.4	94.1	18.2	D	-0.08
Pioneer Brand 26R36	70.5	B	56.9	7.9	103.1	17.8	F	-0.08
VA12W-248	69.8	B	52.4	9.2	114.0	17.9	D	-0.15
PGX 16-7	68.0	D	55.0	9.4	104.8	18.2	D	-0.20
Armor Mayhem	70.6	B	51.1	9.4	101.6	17.7	F	-0.20
CROPLAN 8530	69.2	C	57.7	8.6	133.6	18.0	D	-0.21
VA09MAS2-131-6-2-4	69.6	C	50.8	8.9	110.9	18.2	D	-0.24
Dyna-Gro 9600	68.8	C	57.0	8.3	129.8	17.5	F	-0.31
MAS #7	69.4	C	54.8	8.7	131.5	17.9	D	-0.31

Table 37. Milling and baking quality of entries in the Virginia Tech Wheat Test based on evaluation of the 2017 harvest.

Entry	Adjusted Flour Yield (%)	Adjusted Flour Yield % Grade	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Cookie Diameter (cm)	Cookie Diameter Grade	Total T-Score
L11550	68.5	C	55.5	8.9	109.0	18.0	D	-0.32
DH11SRW069-70	68.1	D	59.3	8.5	107.2	17.7	F	-0.35
VA15W-63	69.8	B	49.1	8.8	91.6	18.4	C	-0.38
VA09MAS2-131-6-2	68.5	C	51.0	9.4	116.1	18.0	D	-0.52
USG 3118	68.6	C	51.6	10.2	125.6	17.6	F	-0.53
VA12W-68	66.9	D	54.6	10.2	105.3	17.9	D	-0.63
VA13W-174	67.8	D	52.6	10.0	121.3	17.5	F	-0.64
VA12W-31	67.5	D	53.8	8.7	129.7	18.4	C	-0.68
SY Viper	67.6	D	56.8	8.6	104.4	17.7	F	-0.78
MAS #61	68.3	C	53.6	8.2	126.1	17.9	D	-0.88
USG 3197	67.1	D	54.1	8.2	129.7	17.5	F	-1.48
AgriMAXX 464	66.5	F	54.4	8.2	129.7	17.6	F	-1.75
Dyna-Gro 9772	66.6	F	53.8	7.8	119.9	18.4	C	-2.05
Mean (N=54)	70.0		55.3	8.8	113.6	18.0		
Standard Deviation	1.6		3.1	0.6	12.3	0.3		

Varieties are ordered by descending Total T-Score.

* Total T-Score = Sum of (0.15 x Test Weight), (-0.1 x SKCS Kernel Hardness), (0.4 x Flour Yield), (0.15 x Softness Equivalent) and (-0.2 x Sodium Carbonate SRC)

Section 5: Wheat Scab Research

One of the primary research objectives of the Virginia Tech wheat breeding program is to identify and develop cultivars possessing resistance to Fusarium Head Blight (FHB) or scab. In 2018, all wheat entries in Virginia's Official State Variety Trials were evaluated for FHB resistance in an inoculated, irrigated nursery at the Virginia Crop Improvement Association (VCIA) test site in Mt. Holly, VA. Data from this test for the current crop year and two-year average for FHB incidence, FHB severity and FHB Index (incidence x severity/100) are included in this bulletin (Tables 38-39) to aid producers in selection of cultivars on the basis of FHB resistance. Cultivars possessing complete resistance or immunity to FHB have not been identified and resistance levels in currently available cultivars vary from moderately resistant to highly susceptible.

A major goal of the breeding program is to identify and incorporate unique and complementary types of FHB resistance into cultivars to enhance the overall level of resistance. Genes controlling FHB resistance have been identified on more than six chromosomes in wheat and some of these genes are complementary in nature and effect different disease resistance components such as FHB incidence, severity, and DON toxin content. Incorporating such multiple resistance genes having additive effects on FHB resistance into cultivars will enhance the overall level of resistance. Because the individual resistance genes are located on different wheat chromosomes and each gene confers only partial resistance to FHB, identifying wheat lines having multiple resistance genes is difficult using traditional breeding techniques. To overcome this limitation, our program is currently identifying and using DNA markers located close to these resistance genes on the same chromosome as "tags" for selecting wheat lines possessing different combinations of these complementary resistance genes.

In 2018, entries were inoculated by spreading scabby corn kernels (50g/4-rows) in plots at the booting stage. A moderately high level of FHB infection was obtained in 2018 as rising temperatures and heavy rainfall during flowering, the most critical time for scab infection.

Among 142 lines and varieties tested in 2018, the FHB index varied from 10.9% to 79% while FHB incidence ranged from 67.5% to 100% and FHB severity ranged from 16.3% to 79% (Table 38). Seventy-six lines and varieties had FHB index values lower than the mean (<45.3) and expressed moderate resistance to FHB in 2018. Based on two-year mean data for 2017 and 2018 (Table 39), four lines and 31 varieties had FHB index values lower than the test mean (<29.5).

Table 38. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)		Powdery Mildew (0-9)	
USG 3228	67.5	-	16.3	-	10.9	-	125.5		6.5	+
MBX 17-P-275	60.0	-	19.8	-	12.0	-	126.0		7.0	+
USG 3197	72.5	-	24.3	-	17.6	-	127.0		3.5	
AgriMAXX 463	67.5	-	26.5	-	18.1	-	126.5		6.5	+
L11551	75.0	-	24.0	-	18.1	-	126.5		4.5	
MAS #86	77.5	-	24.8	-	18.8	-	127.5		3.5	
Dyna-Gro 9772	75.0	-	27.3	-	20.4	-	126.3		5.0	
13VTK434-89	70.0	-	30.5		20.7	-	126.5		1.0	-
NC13-20076	85.0		25.8	-	21.9	-	127.0		3.0	
Armor ARW1716	82.5		27.3	-	23.2		127.3		4.0	
MBX 14-S-210	97.5		26.3	-	25.5		128.5		7.5	+
USG 3316	82.5		30.8		25.5		128.0		7.5	+
15MDX5	82.5		31.8		26.4		125.3		2.5	
AgriMAXX 444	90.0		29.8		26.6		129.0		4.0	
LCS Ammo	92.5		29.5		27.5		127.8		4.5	
Hilliard	82.5		34.3		28.2		126.0		2.0	
DH13SRW025-14	90.0		32.0		28.7		124.0	-	3.0	
USG 3329	85.0		33.5		29.1		126.5		3.0	
Armor ARW1762	87.5		33.5		29.5		128.5		5.5	
AgriMAXX Exp 1892	85.0		35.0		29.9		127.3		3.5	
#Blaze	95.0		31.5		30.0		127.5		4.0	
DH13SRW021-70	85.0		35.5		30.2		126.0		4.5	
AgriMAXX 485	90.0		34.5		31.1		129.0		6.0	
AgriMAXX 415	92.5		33.8		31.4		126.0		4.5	
PGX 17-16	85.0		37.5		31.8		128.8		2.0	
VA16W-105	80.0	-	41.3		32.9		127.0		3.0	
15MDX20	87.5		38.0		33.3		127.0		4.0	
DH13SRW023-201	90.0		38.3		34.5		128.0		0.0	-
Dyna-Gro 9750	85.0		41.0		34.5		126.5		6.5	+
Armor ARW1719	100.0		34.8		34.8		128.3		5.5	
PGX 17-20	90.0		38.8		34.9		128.0		4.5	
AgriMAXX 486	95.0		36.5		35.1		128.5		4.0	
Massey	92.5		38.5		35.5		128.5		2.5	
SY 547	87.5		40.8		35.9		125.0		2.5	
MAS #87	100.0		36.0		36.0		129.0		4.5	
#Turbo	92.5		40.5		37.3		127.5		3.0	
MAS #61	90.0		41.3		37.5		126.5		4.5	
USG 3404	90.0		41.8		37.6		128.3		4.5	
TWS2616	92.5		40.8		37.7		125.0		5.5	
SH 4300	90.0		42.3		38.1		126.3		6.0	
VA16W-148	92.5		41.3		38.2		127.8		2.5	

Table 38. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)	FHB Severity[2] (%)	FHB Index[3] (0-100)	Flowering Date (Julian)		Powdery Mildew (0-9)	
Pioneer 26R36	87.5	42.3	38.2	126.5		7.0	+
13VTK59-148	92.5	41.8	38.5	127.0		4.0	
VA09MAS6-122-7-1	85.0	45.0	38.7	127.0		2.5	
DH11SRW066-153	92.5	42.5	39.2	127.0		2.5	
Dyna-Gro 9522	90.0	41.8	39.3	128.5		5.5	
Luisa	90.0	43.8	39.3	126.5		1.0	-
DH12SRW056-058	87.5	44.8	39.5	127.0		4.0	
Dyna-Gro 9811	95.0	42.3	39.7	124.0	-	2.0	
AgriMAXX 473	97.5	41.0	39.9	129.0		2.5	
L11550	95.0	41.5	39.9	128.0		4.5	
VA16W-202	90.0	44.0	40.0	126.0		1.0	-
#Boss	95.0	41.8	40.1	126.3		5.0	
VA12W-68	95.0	42.0	40.2	124.5	-	3.0	
Pioneer 26R10	92.5	43.3	40.3	127.0		7.0	+
Dyna-Gro 9600	92.5	43.8	41.1	126.0		2.0	
WX17775	100.0	41.3	41.3	129.0		5.0	
NC14-23372	95.0	44.3	42.1	129.0		0.0	-
13VTK82-51	95.0	44.8	42.2	127.0		3.0	
13VA-FHB-DH252	87.5	49.0	42.6	129.5		4.0	
Pioneer 26R45	97.5	43.5	42.7	127.5		4.5	
Pioneer 26R41	95.0	45.3	42.8	127.0		3.5	
SY Miskin	87.5	49.8	43.5	125.0		6.0	
VA16W-152	95.0	46.3	43.7	125.8		4.0	
Dyna-Gro 9701	95.0	45.5	43.7	127.5		2.5	
AgriMAXX 480	95.0	45.8	43.9	123.0	-	2.5	
SH 7510	87.5	49.3	43.9	129.0		5.0	
VA13W-174	92.5	47.5	44.0	124.3	-	1.5	
CROPLAN 8550	95.0	46.0	44.0	129.0		2.0	
MAS #7	92.5	48.0	44.0	129.3		3.0	
VA16W-196	97.5	45.3	44.1	127.3		4.0	
VA09MAS2-131-6-2-4	95.0	46.5	44.5	126.0		3.0	
VA16W-28	92.5	48.5	44.7	128.5		1.5	
DH12SRW057-081	90.0	49.8	44.8	127.3		6.0	
13VTK429-3	92.5	48.5	45.2	127.5		2.0	
MAS #83	97.5	46.3	45.2	127.5		4.5	
13VA-FHB-DH131	97.5	46.5	45.4	128.3		6.0	
Dyna-Gro 9862	95.0	48.0	46.0	130.0	+	5.5	
USG 3429	97.5	46.8	46.0	127.8		7.0	+
12VTK10-156	92.5	50.5	46.8	127.0		5.0	
TWS3418	95.0	48.8	46.8	129.5		5.0	
#Bullet	97.5	48.0	46.8	129.8	+	2.0	

Table 38. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)	FHB Severity[2] (%)	FHB Index[3] (0-100)	Flowering Date (Julian)		Powdery Mildew (0-9)	
TWS2818	97.5	47.8	46.8	129.0		5.5	
VA15W-63	100.0	47.3	47.3	127.0		3.0	
VA15W-67	97.5	49.3	47.6	127.5		1.0	-
MAS #85	92.5	52.0	47.7	128.3		7.5	+
VA09MAS2-131-6-2	92.5	52.8	48.8	125.0		3.0	
VA15W-70	95.0	51.3	48.8	126.5		0.5	-
Armor Mayhem	95.0	50.8	48.8	129.8	+	2.5	
Featherstone 73	95.0	51.5	48.9	127.5		5.5	
USG 3536	95.0	51.0	49.2	129.3		2.5	
SY Viper	90.0	55.0	49.5	124.0	-	4.0	
12VTK15-148	100.0	50.0	50.0	127.5		0.0	-
VA12W-31	97.5	51.0	50.0	129.0		3.5	
MBX 18-A-237	95.0	52.8	50.4	124.0	-	1.5	
VA15W-68	92.5	53.5	50.8	126.0		1.0	-
DH13SRW021-80	90.0	55.5	50.9	127.5		0.5	-
15MDX18	97.5	52.5	51.3	127.5		5.0	
CROPLAN SRW 9606	92.5	55.3	51.7	127.5		4.5	
AgriMAXX Exp 1874	92.5	55.8	51.9	126.0		4.0	
MAS #84	97.5	53.5	52.1	126.0		5.0	
DH12SRW057-006	97.5	53.8	52.2	128.0		2.5	
VA15W-91	97.5	53.8	52.4	127.8		0.5	-
VA16W-224	97.5	53.8	52.6	128.5		1.0	-
VA15W-130	97.5	55.0	53.6	127.0		2.5	
MAS #316	97.5	55.3	54.1	129.5		4.5	
VA16W-31	92.5	57.8	54.1	126.5		2.0	
VA16W-149	100.0	54.5	54.5	126.0		4.0	
VA16W-229	90.0	60.3	54.6	126.8		2.5	
VA16W-124	90.0	60.5	54.9	126.0		2.0	
USG 3118	97.5	56.5	54.9	126.0		1.0	-
MAS #116	97.5	56.5	55.3	129.0		2.5	
MAS #65	90.0	61.0	55.3	125.5		3.5	
Pioneer 26R59	97.5	56.8	55.4	127.3		2.5	
USG 3895	100.0	55.5	55.5	128.0		5.5	
MBX 17-M-245	92.5	59.5	55.6	126.0		3.0	
VA15W-30	90.0	61.8	55.6	125.8		1.0	-
SH 4400	95.0	58.8	56.1	128.5		7.0	+
Armor Nemesis	95.0	58.3	56.1	127.5		8.0	+
NC13-21213	97.5	59.0	57.9	126.0		5.0	
L11719	97.5	59.8	58.2	127.0		2.5	
AgriMAXX 446	100.0	58.8	58.8	128.0		6.5	+
PGX 16-7	95.0	61.5	58.8	125.3		3.0	

Table 38. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)	FHB Severity[2] (%)	FHB Index[3] (0-100)	Flowering Date (Julian)	Powdery Mildew (0-9)
Shirley	95.0	61.8	58.9	127.0	0.0 -
VA09MAS1-12-5-1-1	100.0	59.3	59.3	127.0	6.0
Armor Riptide	95.0	62.5	59.6	127.8	3.0
GA08535-15LE29	100.0	61.0	61.0	128.5	2.0
SH 7200	97.5	63.5	62.1	125.3	3.5
VA09MAS1-12-5-1-3	100.0	62.5	62.5	127.0	2.5
VA16W-29	100.0	63.3	63.3	128.0	0.5 -
AgriMAXX 474	100.0	63.5	63.5	127.3	3.5
#Warrior	95.0	68.3	65.0	126.0	2.5
CROPLAN SRW 9415	100.0	68.3	68.3	129.0	6.0
DH11SRW069-70	100.0	68.5	68.5	129.8 +	3.0
VA15W-92	100.0	69.3	69.3 +	127.5	2.0
CROPLAN 8415	100.0	69.3	69.3 +	126.3	5.0
USG 3458	97.5	72.0 +	70.2 +	125.5	3.5
GA061471-15LE38	100.0	70.3 +	70.3 +	128.0	3.5
VA16W-104	100.0	73.3 +	73.3 +	128.8	2.0
Armor ARW1766	100.0	73.8 +	73.8 +	126.5	2.5
13VTK128-75	100.0	76.5 +	76.5 +	126.5	5.5
VA15W-131	100.0	79.0 +	79.0 +	127.8	4.5
Average	92.5	48.1	45.3	127.1	3.7
LSD (O.05)	100.7	322.3	37.4	1.3	50.0
C.V.	12.9	21.5	23.5	2.2	2.5

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

Scab Incidence (0-10): Based on infected spikes within 4 ft row.

Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

Table 39. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)		FDK[4] (%)	ISK[5] (0-100)	
USG 3228	52.5	-	11.8	-	6.9	-	116.5		24.0	23.0	-
MBX 17-P-275	51.3	-	13.3	-	7.5	-	116.5		25.5	25.0	-
AgriMAXX 463	57.5	-	16.8	-	10.8	-	116.5		20.5	24.6	-
USG 3197	58.8	-	17.4	-	11.3	-	117.3		36.5	31.3	
Dyna-Gro 9772	51.3	-	22.1	-	12.6	-	116.3		21.5	21.9	-
USG 3316	68.8		24.0		17.4	-	118.3		18.5	29.1	
#Blaze	78.8		21.9	-	18.8		117.8		27.5	33.4	
MBX 14-S-210	73.1		24.9		19.0		119.5	+	26.5	32.3	
AgriMAXX 444	68.8		26.8		19.0		120.0	+	27.5	32.4	
Dyna-Gro 9750	70.0		25.0		19.7		116.5		25.5	29.4	
Massey	68.8		28.4		21.6		117.5		36.5	33.6	
MAS #61	63.8	-	28.0		21.6		117.0		23.5	25.1	-
SY 547	68.8		28.4		21.9		116.5		28.5	31.2	
AgriMAXX 473	75.0		24.9		22.3		118.5		25.0	28.4	
SH 4300	66.9		28.5		22.3		117.8		27.0	28.4	
VA12W-68	68.8		27.2		22.7		113.8	-	20.0	24.5	-
Dyna-Gro 9600	70.0		27.5		22.9		116.3		28.5	29.0	
Pioneer 26R36	72.5		28.0		23.2		118.0		31.0	33.8	
Hilliard	66.3		35.0		23.2		116.5		30.5	37.9	
AgriMAXX 415	75.6		29.7		23.5		117.0		25.5	35.5	
VA09MAS6-122-7-1	66.3		31.3		23.6		115.0	-	18.0	26.7	
USG 3404	70.6		31.2		23.9		120.0	+	24.0	31.2	
#Turbo	71.9		31.4		24.3		116.3		24.5	31.8	
VA13W-174	71.3		28.9		24.6		114.5	-	23.5	27.5	
Dyna-Gro 9522	69.4		31.2		24.8		119.8	+	24.5	30.6	
Dyna-Gro 9701	76.3		28.6		25.2		117.8		27.0	31.6	
CROPLAN 8550	76.3		28.7		25.3		119.8	+	21.0	29.1	
Pioneer 26R45	73.1		29.8		25.3		117.8		24.5	29.3	
VA09MAS2-131-6-2-4	71.3		29.7		25.4		115.3	-	27.0	28.9	
#Bullet	74.4		28.4		25.7		119.3	+	31.0	30.4	
Dyna-Gro 9862	69.4		30.7		25.8		120.5	+	23.0	26.3	
DH12SRW056-058	70.6		34.7		26.6		117.5		26.5	34.1	
#Boss	71.3		35.1		26.8		116.5		25.5	33.0	
USG 3536	75.0		31.0		27.5		119.5	+	24.0	29.4	
Armor Mayhem	77.5		30.6		27.6		119.5	+	19.0	28.7	
MAS #7	76.3		33.9		27.9		120.3	+	23.0	33.1	
Pioneer 26R10	73.1		38.0		29.0		118.3		25.5	36.2	
MAS #316	78.1		32.5		29.9		120.3	+	20.5	28.7	
MAS #116	74.4		33.3		30.2		118.5		23.5	27.8	
SH 4400	84.4	+	33.0		30.8		112.3	-	30.0	36.3	
SH 7510	73.1		41.2		31.5		118.8		27.0	38.3	
Dyna-Gro 9811	73.8		44.7		32.0		115.5	-	27.0	40.7	

Table 39. Summary of reaction of entries in the Virginia Tech State Wheat Test to Fusarium head blight (scab) and glume blotch resistance, 2018 harvest.

Line	FHB Incidence[1] (%)		FHB Severity[2] (%)		FHB Index[3] (0-100)		Flowering Date (Julian)		FDK[4] (%)		ISK[5] (0-100)	
PGX 16-7	66.3		38.9		32.5		114.5	-	24.0		25.8	
Featherstone 73	76.9		41.1		33.5		118.3		16.0		33.2	
USG 3118	76.3		40.4		34.1		113.3	-	32.5		36.8	
VA15W-63	85.6	+	38.6		34.3		117.3		30.5		42.6	
Armor Nemesis	80.0		39.4		34.7		117.8		28.5		37.1	
VA09MAS2-131-6-2	76.9		42.9		35.1		115.3	-	19.5		36.1	
CROPLAN SRW 9606	78.8		41.8		35.1		118.0		26.0		38.4	
DH12SRW057-006	78.8		42.6		35.4		117.8		29.5		39.3	
USG 3895	79.4		42.2		36.1		117.5		38.0		41.5	
L11550	80.6		45.3		36.3		118.0		26.0		45.0	+
Pioneer 26R41	78.1		48.4		37.3		118.0		27.0		44.6	+
AgriMAXX 446	77.5		44.0		37.8		119.0	+	33.5		38.7	
Pioneer 26R59	78.8		45.8		37.9		117.3		29.5		40.3	
MBX 17-M-245	81.3		44.6		38.0		117.0		23.5		39.3	
SY Viper	70.6		56.0	+	39.3		115.3	-	18.5		39.9	
VA12W-31	85.6	+	46.0		40.1		118.3		36.0		48.8	+
CROPLAN SRW 9415	80.0		43.8		40.2		119.8	+	26.0		34.2	
VA09MAS1-12-5-1-1	80.0		49.2	+	41.3		118.3		26.0		40.1	
AgriMAXX 474	85.6	+	45.5		41.7		118.0		29.5		41.5	
VA09MAS1-12-5-1-3	81.3		50.0	+	43.0	+	118.0		24.5		39.8	
NC13-21213	80.6		51.3	+	43.3	+	116.8		34.5		46.0	+
Armor Riptide	80.6		52.2	+	43.5	+	117.8		16.0		38.8	
#Warrior	82.5		51.0	+	44.4	+	116.8		27.0		41.9	
USG 3458	80.6		50.8	+	44.6	+	117.0		21.5		36.6	
SH 7200	80.6		54.1	+	45.3	+	115.5	-	37.5		47.6	+
Shirley	78.1		57.3	+	45.4	+	117.3		49.5	+	54.0	+
DH11SRW069-70	75.0		57.1	+	45.8	+	120.3	+	28.0		39.9	
CROPLAN 8415	83.1		57.0	+	50.4	+	116.5		37.5		48.3	+
Average	73.8		36.1		29.5		117.4		26.6		34.5	
LSD (0.05)	9.9		12.6		12.1		1.4		12.3		8.8	
C.V.	9.6		24.9		29.4		0.9		23.1		12.7	

Released cultivars are shown in bold print.

Varieties are ordered by ascending index averages.

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

Entries were planted in 2-row plots, 4ft in length at Mt. Holly, VA and were inoculated at booting stage with scabby corn kernels (50g/4-rows).

[1] Scab Incidence (0-10): Based on infected spikes within 4 ft row.

[2] Scab Severity (0-10): Based on infected spikelets in 10 spikes showing disease symptoms.

[3] FHB Index=(Incidence*10) x (Severity*10)/100; it is an overall indicator of scab resistance/susceptibility level.

[4] FDK (%): Fusarium damaged kernels, visual assessment of the percent of infected kernels.

[5] ISK Index = 0.3 *(Severity) + 0.3 *(Incidence)+ 0.4 *(FDK); composite of head and kernel traits.

[6] DON (ppm): Concentration of vomitoxin (deoxynivalenol).