

Request for release of VA17W-75

May 16, 2022

I Parentage, Breeding History, and Cultivar Name

VA17W-75 is a soft red winter (SRW) wheat line derived from the cross VA09W-45 / 'Yorktown' (PI 667643), completed in spring of 2011. Parentage of VA09W-45 is GF921221E16 / VA98W-590 (a sibling of 'McCormick') // VA99W-200. The F1 generation was grown in 2011 as a single 4 ft headrow in Warsaw, VA to produce F2 seed. The population was advanced from the F2 to F4 generation using a modified bulk breeding method where wheat spikes were selected in each segregating generation on the basis of absence of obvious disease, maturity, short straw and desirable head shape and size. Selected spikes were threshed in bulk, and the seed was planted in 225 ft² blocks at Blacksburg and/or Warsaw, VA in the fall of each year. Single heads from an F4 segregating population grown in both Warsaw, VA (118 heads) and Blacksburg, VA (101 heads) in 2015 were planted into single 4 ft. headrows for the 2016 harvest season. VA17W-75 was established from one of these F4:5 headrows in the summer of 2016, originating from the F4 segregating population grown in Blacksburg, and tested in the 2017 SRW Observation in Blacksburg and Warsaw VA. This line was advanced to the SRW Preliminary for the 2018 harvest season, tested in Blacksburg VA, Warsaw VA and Painter, VA, and subsequently evaluated in the Virginia official variety trial from 2019-2021 (Tables 1-4). For the 2019 harvest season, VA17W-75 was evaluated in the Gulf Atlantic regional nursery (8 locations, Table 6) and the Mason Dixon regional nursery (5 locations, Table 5). In 2020, VA17W-75 was evaluated in the USDA-ARS Uniform Eastern Soft Red Winter Wheat Nursery (UESRWWN; 19 locations, Tables 7-9).

II Description of the Variety

VA17W-75 is a broadly adapted, high yielding, high test weight, early, semi-dwarf (Rht2) SRW wheat with acceptable milling and baking quality. Line VA17W-75 expresses high levels of resistance to powdery mildew (*Blumeria graminis*), leaf rust (*Puccinia triticina*), and Fusarium Head Blight (*Fusarium graminearum*), as well as moderate resistance to stripe rust (*Puccinia striiformis*), Barley Yellow Dwarf Virus, leaf blotch (*Septoria tritici*) and leaf and glume blotch (*Septoria nodorum*; Tables 1-7, 9). VA17W-75 has tapering blue-green heads with tip awns (apically awnleted), a blue waxy stem, an erect twisted waxy green flag leaf, yellow anthers, yellow straw, and white chaff.

Mean head emergence of VA17W-75 in Virginia is early (118 d) similar to 'SY Viper', 2 days earlier than 'Hilliard' (PI 676271), 4 days earlier than 'Argi MAXX 473', and about

a day later than 'Laverne' (PI 692615). Mean plant height is 35 inches, similar to that of 'Featherstone 125', 1.5 inches shorter than 'SY Viper' and 'Hilliard', and 5 inches taller than 'Laverne'. Straw strength (0 = erect to 9 = completely lodged) is good at 0.75 across three years in Virginia (Table 1).

Across three years, VA17W-75 ranked third in mean grain yield (89.0 bu/ac) in the Virginia Tech Official Variety Test in the state of Virginia, from 2019 to 2021, not significantly different from the highest yielding line, SY Viper (89.8 bu/ac; Table 1). In 2019, VA17W-75 had a mean grain yield (88.1 bu/ac) over 6 locations that was significantly ($P < 0.05$) higher (6%) than the overall trial average (83.4 bu/ac) and not significantly lower than the top yielding line, 'SY Viper' (92.6; Table 2). In 2020, VA17W-75 had a mean grain yield (93.1) over 7 locations just below the significance threshold to be different from the trial mean (mean + LSD = $89.2 + 4.6 = 93.8$; Table 3). Grain yield was significantly higher than the trial mean again in 2021 ($P < 0.05$), and not significantly different from the second highest yielding line (Table 4). In and across all three years, the mean test weight of VA17W-75 (59.5 lb/bu) was significantly greater than the trial average (58.3 lb/bu; Tables 1–4). In the 2019 Mason Dixon Trial, VA17W-75 ranked first out of 68 entries for grain yield (88.3 bu/ac) across 5 locations in VA, KY and NC, with a similar yield to that of the second highest yielding line, Shirley (87.0 bu/ac; Table 5). In 2019, VA17W-75 ranked 8th out of 55 entries in the Gulf Atlantic Wheat Nursery for grain yield (65.9 bu/ac; trial mean = 60.9; Table 6). VA17W-75 ranked 5th in the 2020 USDA-ARS Uniform Eastern SRW wheat nursery for grain yield (77.5 bu/ac; Tables 7–8) among 29 entries evaluated over 19 locations, and did not differ significantly ($P \geq 0.05$) from the second highest yielding entry, IL15-2639 (84.5), but was significantly lower than the highest yielding entry, KWS291 (85.4 bu/ac). In that test, VA17W-75 had the second highest test weight of the trial (58.7 lb/bu), significantly higher than the overall trial average (57.4 lb/bu).

Grain samples of VA17W-75 produced in 6 crop environments (2017–2020) were evaluated for end use quality by the USDA-ARS Soft Wheat Quality Lab. VA17W-75 has expressed slightly poorer milling and baking quality than Hilliard across 6 yield trials (data not shown 2017–2019; 2020 in Table ??). However, a recent submission for more thorough quality testing from large plots grown in Lanexa VA in 2021 demonstrated similar milling and baking quality to Hilliard, as well as very desirable characteristics for strong gluten (Table 10), similar to those of Pioneer 25R26, an older line prized for high gluten strength in its time (Harry Levine; personal communication).

III Disease, Insect and Other Interactions

Reaction of VA17W-75 to various plant diseases and insect pests recorded over a diverse set of environments (Tables 1–7, 9). VA17W-75 is highly resistant to powdery mildew (*Blumeria graminis*), having never received a score greater than 0 (0=immunity to 9=very susceptible). VA17W-75 contains leaf rust resistance genes *Lr9* and *Lr19*, and is also highly resistant to leaf rust (*Puccinia triticina*) in the field, with average ratings ranging from 0 to 1.0. The USDA-ARS Cereal Disease Lab in St. Paul, MN (data summarized here) evaluated seedling resistance of entries in the Uniform Eastern SRW Wheat Nursery for resistance (0;3) to 9 races of leaf rust (*Puccinia triticina*). VA17W-75 was resistant (0; to ;1) to all races tested, PBLRQ, MMPSD, MJBHG, TBBGS, MBPSD, MCTNB, MHDSB, MFJSB and KFBHG.

VA17W-75 was also determined in the greenhouse at Virginia Tech to be resistant to race TCRKG, but susceptible to race TNRJJ.

Seedling disease screens (0-2, resistant and 3-4, susceptible) of entries in the 2020 Uniform Eastern Nursery with 15 races of stem rust (*Puccinia graminis*) were conducted by the Cereal Disease Lab, with VA17W-75 demonstrating moderate resistance to all but three races (2- or 2 for QFCSC, QTHJC, MCCFC, RCRSC, RKRQC, TPMKC, TTTTF, GFMNC, QCCSM, TTKSK, TTKTT, TTTSK (Ug99); 3 for TKTTF and TTKTT+, 2+3 for TKKTP). In field tests conducted by the Cereal Disease Lab at St. Paul, MN using a composite of stem rust races (QFCSC, QTHJC, MCCFC, RCRSC, RKRQC, and TMPKC) as inoculum, VA17W-75 had stem rust severity (0–100%) and reaction type rating of 20RMR. These results support the detection of the 1A:1R rye translocation in VA17W-75.

VA17W-75 was shown in 2019 to be moderately susceptible to stripe rust (*Puccinia striiformis*) in field trials with mean disease scores (0–9) varying from 1 to 4 (Tables 5–6). In controlled environment trials conducted by USDA-ARS Wheat Genetics, Quality, Physiology, and Disease Research Unit at Pullman, WA in 2020, VA17W-75 showed susceptibility to five tested races (PSTv-4, PSTv-14, PSTv-37, PSTv-40, and PSTv-51) of stripe rust. Average infection type (0–9) for adult plants of VA17W-75 were rated as 2 for races PSTv-14 and PSTv-40, and rated 5 for race PSTv-37. VA17W-75 had infection type (0–9) ratings varying from 0 to 8 in the Uniform Eastern for field trials conducted at four locations in Washington State. Stripe rust severity (%) ratings varied from 2 to 50%, suggesting moderate susceptibility. Stripe rust races in Washington differ for virulence and are more diverse than those in the eastern U.S.

VA17W-75 has an average response (2.17) to Barley Yellow Dwarf Virus (Table 1), while also having an average response to leaf blotch caused by Septoria tritici (3.8) and leaf (5) and glume (3.3) blotch cause by Septoria nodorum. In growth chamber tests (Tables 5–6) conducted by USDA-ARS at West Lafayette, IN, seedlines of VA17W-75 were shown to be resistant to B,C,D,O biotypes of Hessian fly but susceptible to biotype L. Reaction of VA17W-75 to Wheat Spindle Streak Mosaic Virus and Wheat Soil Borne Mosaic Virus is not known.

VA17W-75 has demonstrated very good resistance to fusarium head blight, or scab, caused by *Fusarium graminearum* (Tables 1–7, 9), with lower index, FDK and Deoxynivalenol (DON) toxin levels. Across years 2019 and 2020 with high infection in the misted, inoculated nursery in Virginia, VA17W-75 had a significantly lower ISK index within and across years ($P < 0.05$) and ranked 4th lowest DON value (1.98 ppm) out of 69 entries, with the resistant check 'Jamestown' having a higher DON value (3.56 ppm). VA17W-75 (0.56 ppm) had the second lowest DON value in 2020, eclipsed only by 'MAS #106' (0.24 ppm). Similar trends were observed in 2021 Virginia OVT despite infection rates being poor that year, but because infection rates were poor, they were not added to the over year means (Table 4). Across 8 locations in 2019, similar performance was observed in the regional Southern Uniform Soft Winter Wheat Scab nursery, with VA17W-75 having a mean ISK of 42, 20% FDK, and 5ppm DON compared to the susceptible check, 'Jamestown' with ISK of 38, 21% FDK, and 4 ppm DON (Table 9). In the Gulf Atlantic Nursery, VA17W-75 had an FDK of 27% and DON levels of 7 ppm in VA compared to Hilliard (MR) with FDK of 45% and DON of 21 ppm (Table 6). In the 2019 Mason Dixon Nursery, VA17W-75 had an

FDK of 10% and DON levels of 5 ppm in VA compared to Hilliard (MR) with FDK of 25% and DON of 6 ppm (Table 5). These results support the DNA marker data indicating that VA17W-75 contains the 1A and 6A Neusse QTL alleles that infer partial resistance to FHB.

IV Justification for Release

Line VA17W-75 like Hilliard is a widely adapted, high yielding, wheat variety with acceptable milling and baking qualities and expresses moderate to high levels of resistance to most of the predominant diseases in the SRW wheat region, with the exception of stripe rust. In comparison to Hilliard, VA17W-75 is earlier maturing by 2 days ($P < 0.05$), has significantly ($P < 0.05$) higher test weight (59.4 versus 58.2 lb/bu), and has higher grain yield over multiple seasons (+2.4 bu/ac; LSD = 2.7 bu/ac; Table 1). Importantly, VA17W-75 is numerically more resistant to scab over multiple trials and years to moderately resistant cultivars 'Jamestown' and 'Hilliard' (Tables 1–6, 9). Although, with the variability in FHB traits, each single comparison was not statistically significant. VA17W-75 is often among the most resistant lines under evaluation in the nursery, where no large-effect single R genes against scab are currently known.

V Areas of Adaptation

VA17W-75 appears most well adapted to the mid Atlantic and lower Midwest. VA17W-75 produced a three-year (2019 to 2020) mean yield that was significantly ($P < 0.05$) higher than the trial average for the Virginia State wheat test, ranking 3rd after SY Viper and USG 3329 (N.S.; Table 1). It ranked 1st in the 2019 Mason Dixon Nursery (Table 5) and 8th in the 2019 Gulf Atlantic Nursery (Table 6) producing mean yields that were 19% and 8% higher than the respective trial averages. In the Mason Dixon, VA17W-75 ranked among the top 16 lines in every location, including first in both Raleigh NC and Lexington, KY, and 11th and 13th in the Warsaw and Blacksburg VA locations. In the Gulf Atlantic Nursery, VA17W-75 placed among the top 13 lines in Marianna, AR (1), Blacksburg VA (13), Plains GA (13), and Prosper, TX(11), while failing below the mean in Kinston NC(32), Raleigh NC(35), and Florence SC (42). In the 2020 Uniform Eastern SRW Wheat Nursery, VA17W-75 ranked 5th in grain yield over 17 locations (Table 7), yields significantly ($P < 0.05$) higher than test averages at Warsaw VA (rank = 1) and Highland, IL (3). In the Eastern Uniform, it ranked 7th or higher in trials located in AR (1/2), IL (3/4), IN (1/2) NE (1/1) NY(1/1) OH () TN(1/1) and VA(2/2).

Line VA17W-75 was entered into 2021-2022 Official Variety Trials in AL, AR, DE, GA, IL, KY, LA, MD, MO, MS, NC, NY, OH, PA, SC, TN, and VA to better determine where it should be marketed.

VI Breeder and Foundation Seed Available

During fall 2019, 400 headrows of the wheat line VA17W-75 were planted in an isolation block and evaluated for purity and trueness of type during spring 2020. Among these, 54 rows with differential phenotypes were identified and removed. These included 36 lines that were too tall, 2 that were tall and awnleted, 6 late heading types, 1 early heading type, 3 bluer types, 2 greener types, 2 with waxy heads, 1 prostrate and 1 with blue blocky heads.

Three headrows were uneven and thus removed from the total as a cautionary measure. This left remaining 343 lines with very similar phenotypic appearance with a variance of $54/397 = 13.6\%$. Fifty pounds of breeder seed was planted on 0.5 acres at the Virginia Crop Improvement Association in the fall of 2020. The harvested seed from the breeder seed increase in 2020 was used to plant an additional 8.75 acres at VCIA in the fall of 2021, with 700 bushels expected to be available for fall 2022 planting.

VII Regional Variety Release Committee

No regional committee exists.

VIII Proposed Method and Agency Responsible for Distribution

The Virginia Crop Improvement Association will be responsible for distribution of Foundation Seed of VA17W-75 through the Foundation Seed Farm at Mount Holly, Virginia, unless other arrangements are agreed upon.

IX Proposed Method and Agency Responsible for Maintenance of Breeder Seed

Breeder Seed of VA17W-75 will be maintained under the School of Plant and Environmental Sciences in affiliation with the Virginia Agricultural Experiment Station located in Blacksburg, Virginia.

X Persons Submitting Request

Nicholas Santantonio, School of Plant and Environmental Sciences

XI Parties Potentially Interested in Obtaining Marketing Rights

Exclusive Release: JoMar Seeds, Inc. (USA and Ontario)

Figure 1: Increase plot of VA17W-75 grown in Warsaw in 2021 (May 26, 2021).



Table 1: Virginia State Official Variety Test across 3 years, 2019-2021, comprised of 19 site-years.

	Grain Yield bu/ac	Test Weight lb/bu	Date Headed Julian	Mature Height in	Plant Lodging 0-9	Leaf Rust 0-9	Powdery Mildew 0-9	BYD ^a Virus 0-9	Septoria 0-9	FDK ^b %	ISK ^c (2)	DON ^d ppm
Line	(19)	(19)	(6)	(9)	(10)	(5)	(4)	(3)	(1)	(2)	(2)	(2)
SY Viper	89.8+	59.6+	118-	37+	1	3+	0	1	3	16	26	4
USG 3329	89.4+	58.0-	121	35	0	4+	0	2	4	18	34	4
VA17W-75	89.0+	59.5+	118-	35	1	0-	0-	2	2	14	19-	2
Pioneer 26R59	88.9+	58.2	121	32-	0	3+	0	3	2	37	52+	5
MAS #86	88.5+	57.1-	121+	36+	0	3+	0	2	3	13	18-	3
Featherstone 125	88.3+	60.4+	122+	35	1	0-	1+	0-	3	22	39	7
13VTK429-3	88.2+	59.2+	122+	35	0	0-	0	1-	2	33	47	7
Progeny #BUSTER	88.0+	58.7+	122+	35	0-	1	1	2	3	30	43	8
AgriMAXX 473	87.0	57.8-	122+	36+	0	0-	0	3+	2	10	28	4
Shirley	87.0	57.1-	122+	33-	0	0-	0-	2	2-	43+	59+	11
VA17W-74	87.0	59.5+	118-	35	1	0-	0-	2	3	21	30	3
Pioneer 26R45	86.7	58.1	121+	36+	1	1	1	2	3	13	29	1
Hilliard	86.6	58.3	120	37+	0	1-	0	1	3	22	29	6
SY Richie	86.6	58.1	117-	34-	0	0-	0	1-	2	28	43	10
USG 3316	86.5	58.2	123+	35	0	4+	3+	2	4	18	32	6
MAS #316	86.4	57.7-	124+	36+	0	3+	1+	3+	3	14	25	5
MBX 17-M-245	86.4	57.5-	120-	34-	0	2+	0	3+	2	28	46	6
Progeny #BULLET	85.8	57.7-	123+	36+	0	1	0	2	3	17	26	3
13VTK59-55	85.2	59.3+	121	34-	0	0-	0	0-	2-	18	39	5
Laverne	85.2	58.3	118-	30-	0	0-	1	1-	4+	21	32	5
LW2848	85.2	57.7-	123+	36+	0	1	0	2	3	8-	24	4
DH13SRW022-23	85.1	58.5	122+	34-	0	1-	0-	0-	5+	20	28	3
SY 547	84.9	58.1	120	37+	1	1	0	2	3	28	39	6
mean	85.0	58.3	120.6	34.9	0.4	1.4	0.5	1.7	3.1	22.4	33.8	6.1
CV	9.7	1.7	1.0	4.6						32.4	23.4	63.1
LSD	2.7	0.3	0.6	0.8	0.4	0.7	0.5	1	1.1	14.5	13.6	9.5

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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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	Septoria	FDK ^b	ISK ^c	DON ^d
Liberty 5658	84.8	59.1+	119-	36+	0	1-	0	0-	5+	15	21	6
SH 4400	84.7	58.5	124+	36+	0	3+	2+	2	4	32	47	5
CP8118	84.4	57.1-	119-	32-	0	0-	0	1	3	18	34	5
SY 007	84.4	58.1	119-	35	0	2	0	2	3	12	25	5
LW2958	84.3	58.7+	122+	36+	0	2	0	2	3	14	26	3
USG 3118	84.1	59.4+	118-	32-	0	0-	0	2	3	17	30	5
USG 3536	83.7	57.8-	122+	36	1	1	0	2	3	10	20-	4
15VDH-SRW02-075	83.6	58.8+	123+	36+	0	0-	0	1	3	22	39	11
SY 576	82.1-	57.1-	127+	36+	0	1-	2+	2	4	22	33	4
Progeny #BERKELEY	81.3-	57.9-	118-	34-	0	1	0	2	4+	30	41	13
SH 7200	80.9-	59.0+	118-	36+	1	0-	0	4+	2	42+	53+	10
MAS #67	79.9-	56.7-	121	34-	0	2	1+	2	3	5-	12-	1
MAS #106	75.1-	58.2	115-	34-	1	2	2+	2	4+	6-	8-	1
Massey	69.7-	58.8+	121	38+	1+	7+	0	1	3	23	32	4
mean	85.0	58.3	120.6	34.9	0.4	1.4	0.5	1.7	3.1	22.4	33.8	6.1
CV	9.7	1.7	1.0	4.6						32.4	23.4	63.1
LSD	2.7	0.3	0.6	0.8	0.4	0.7	0.5	1	1.1	14.5	13.6	9.5

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Table 2: Virginia State Official Variety Test across 6 locations in 2019.

	Grain Yield bu/a	Test Weight lb/bu	Date Headed Julian	Mature Height In	Plant Lodging 0-9	Leaf Rust 0-9	Powdery Mildew 0-9	BYD ^a Virus 0-9	FDK ^b %	ISK ^c	DON ^d ppm
Line	(6)	(6)	(2)	(3)	(5)	(2)	(1)	(1)	(1)	(1)	(1)
SY Viper	92.6+	59.2+	118-	34+	1	4+	0	2	18	28	6
Pioneer 26R59	91.8+	57.4	120	30-	0	4+	0	3	30	48	7
PGX 18-8	91.6+	57.9	121+	31	0	3+	0	1	40	43	15
KWS19X09	90.2+	57.3-	119-	32	0	4+	0	1	30	41	8
Dyna-Gro WX19712	89.9+	57-	120	32	0	1	0	1	50	45	16
PGX 18-7	89.8+	58.6+	120	32	0	2	0	3			
USG 3316	89.8+	57.7	122+	32	1	4+	2+	3	20	30	9
Armor ARW1813	89.7+	57.1-	120	32	0	4+	0	3			
SY 100	89.3+	55.8-	121+	31	1	4+	0	2	15	38	9
SR 8144	89.2+	57.1-	117-	32	1	0-	0	1			
VA15W-86	89.1+	57.7	119-	32	1	0-	0	1	20	32	14
#Warrior	89+	57-	120	31	0	4+	0	2	55	57+	18
USG 3790	89+	58	122+	31	0	4+	0	1	35	42	19
Pioneer 26R36	88.7+	57.8	121+	31	1	1-	4+	1	35	34	5
15VDH-FHB-MAS25-08	88.5+	58.6+	117-	31	1	0-	0	1	30	30	8
Dyna-Gro 9941	88.5+	56.4-	122+	33	0	4+	0	2	22	29	8
MBX 17-M-245	88.5+	57.1-	120	32	0	4+	0	2	45	51+	12
LCS 11814	88.4+	56.5-	118-	29-	2+	1-	0	2	10	24-	6
Pioneer 26R10	88.4+	57.3-	121+	32	0	4+	0	2	22	38	6
VA16W-148	88.3+	59+	122+	33	1	2	0	2	35	35	14
VA17W-176	88.3+	58.6+	119-	31	0	0-	2+	1	25	40	6
USG 3458	88.1+	56.9-	120	31	0	4+	0	2	40	52+	6
VA17W-75	88.1+	58.7+	118-	33	1	1	0	2	20	23-	3
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

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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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf^b Fusarium Diseased Kernels (percent).^c ISK Index = (0.3 × FHB Incidence + 0.3 × FHB Severity + 0.4 × Fusarium damaged kernels) / 100.^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
VA09MAS1-12-5-1-1	88+	59.4+	121+	32	1	0-	0	1			
AgriMAXX Exp 1902	87.9+	56.9-	121+	31	0	3+	2+	2	25	26-	10
VA17W-167	87.9+	57.6	122+	33+	1	0-	0	2	35	60+	10
#Blaze	87.8+	57.5	120	33	1	4+	0	3+	30	39	4
USG 3329	87.7+	57.6	119-	33	0	4+	0	3	18	39	7
AgriMAXX 486	87.3+	57.2-	123+	33	0	4+	1	2	30	32	10
VA16W-149	87.3+	58	122+	31	1	1-	0	2	25	38	6
MAS #86	87	56.7-	121+	32	1	3	0	1	22	19-	5
13VTK429-3	86.8	58.4+	122+	32	0	1	0	1-	35	44	7
15VDH-FHB-MAS41-13	86.8	61.1+	117-	35+	0	0-	0	1	18	39	8
USG 3895	86.6	57.2-	121+	30-	1	1	3+	2	40	52+	10
VA16W-202	86.6	56.7-	119-	30-	0	0-	0	1			
USG 3197	86.5	56.1-	119-	33+	1	1	2	1	8	14-	4
USG 3404	86.4	57.1-	122+	32	1	3+	2+	1	20	32	5
Armor ARW1819	86.3	57.9	121+	31	1	3	0	1	30	34	12
VA09MAS2-131-6-2	86.3	58.1	118-	28-	0	0-	0	1			
Dyna-Gro WX19714	86.2	56.6-	121+	32	0	4+	0	3+	25	32	10
Armor Velocity	86.1	58.2	119-	32	1	2	3+	3	25	26-	9
KY07C-1145-94-12-5	86	59+	119-	33	1	4+	0	2	20	41	4
LCS 11718	86	56.2-	120	33	1	1	0	2	28	34	7
DH13SRW022-23	85.7	58	122+	32	1	1-	0	1-	25	27	5
MAS #61	85.7	57.5	119-	31-	2+	2	2	2	20	29	6
AgriMAXX 495	85.6	58.6+	121	32	0	2	0	3	30	34	6
AgriMAXX 415	85.5	58.9+	120	32	1	3+	2	2	35	44	9
Dyna-Gro 9600	85.5	56.7-	118-	33	0	1	0	2	8	19-	3
LW2958	85.5	58.1	121+	34+	1	2	0	3	18	28	4
Dyna-Gro 9811	85.3	57.6	120	33	1	1-	0	3	30	40	11
CROPLAN CP9606	85.2	56.8-	120	32	0	3	0	3	20	44	6
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

continued ...

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

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
SY 007	85.2	58.1	118-	32	0	2	0	3	10	33	9
Pioneer 26R45	85.1	58	121+	34+	1	2	2	3	20	21-	2
MAS #35	85	57-	122+	32	1	4+	0	2	50	42	12
VA16W-29	84.8	57.2-	123+	33	0	4+	0	1	60	59+	23
VA17W-74	84.8	58.8+	118-	33	0	1-	0	1	30	36	6
LCS 11719	84.7	57.8	122+	30-	0	3	0	2	40	39	15
#Berkeley	84.6	57-	118-	32	1	1	0	2			
Shirley	84.6	56.9-	121+	31	1	1	0	2			
VA16W-224	84.6	56.5-	123+	34+	1	2	0	1	30	44	14
AgriMAXX 463	84.4	56.4-	119-	31	0	3	0	1	8	10-	2
DH12SRW057-006	84.4	59.8+	122+	30-	0	0-	0	1-	50	60+	17
PGX 17-16	84.4	58.6+	120	32	0	3	1	2	18	30	5
VA16W-108	84.4	57.7	121	33	1	1	0	1	40	58+	9
15VDH-SRW02-075	84.3	57.7	122+	33	1	0-	0	1	32	43	18
DH12SRW056-058	84.3	58.6+	118-	33	1	1	0	1			
Pioneer 26R41	84.3	57.5	122+	30-	0	1-	0	1	35	39	10
MBX 969	84.2	56.5-	121+	32	0	4+	1	2	15	24-	7
Dyna-Gro 9772	84	56.4-	119-	32	0	1-	1	2	25	26-	5
DH12SRW057-081	83.9	59+	118-	31-	1	1-	1	2	8	25-	2
LW2937	83.9	56.6-	122+	32	1	4+	2	3	20	29	8
PGX 18-2	83.8	58.7+	118-	32	0	1	0	2	30	35	8
Hilliard	83.7	57.6	120	34+	0	1	0	1	27	34	10
VA16W-124	83.7	58.2	119-	31	1	1-	0	1	40	54+	10
15VDH-FHB-MAS22-15	83.5	59+	115-	32	1	0-	0	1	20	29	9
Dyna-Gro 9980	83.5	58.8+	118-	31	0	4+	0	2	20	20-	6
Dyna-Gro WX19711	83.3	58.2+	122+	31	0	3+	0	3	15	28	5
Featherstone 31	83.2	58.1	121+	31	1	1-	0	2	25	54+	9
GA09129-16E55	83.2	59+	117-	33	0	1	0	3	30	43	9
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
MBX 932	83.1	57.9	123+	31	1	4+	2	2	25	31	3
AgriMAXX 473	83	56.9-	121+	34+	0	1-	0	2	15	26-	6
SH 7510	83	58	121+	32	1	2	0	2	25	37	8
VA17W-79	83	57.8	119-	33	1	0-	0	1	20	34	12
Dyna-Gro 9932	82.8	58.3+	121+	33	0	2	0	1	15	24-	4
Dyna-Gro 9701	82.6	57-	122+	34+	1	2	0	2	8	18-	4
KWS19X03	82.6	56.8-	124+	30-	1	2	0	2	40	47	12
VA16W-105	82.6	56.8-	120	32	1	1	0	2	28	46	8
GA071518-16E39	82.5	58.3+	119-	32	0	2	0	2	80	85+	36
MAS #105	82.5	57.8	122+	31	0	3	1	3	20	24-	4
USG 3228	82.4	56.4-	119-	31	0	2	2+	2	5	10-	1
DH11SRW066-153	82.3	59.2+	123+	33	1	2	0	1	40	42	13
AgriMAXX Exp 1906	82.2	57.5	119-	32	0	1-	0	3	30	50+	17
15VDH-FHB-MAS22-14	82.1	60.5+	119-	32	1	0-	0	1	8	8-	4
AgriMAXX 485	82.1	57.7	122+	30-	0	3+	2+	2	20	22-	3
LW2848	82.1	56.8-	122+	34+	0	2	0	1	10	17-	6
KY09C-1245-99-12-3	82	57.4	119-	32	0	2	0	3+	22	29	7
CROPLAN CP9415	81.8	57.4	122+	31	0	4+	2+	4+	40	49+	16
LW2867	81.8	57.7	123+	32	0	4+	0	3+	15	23-	2
USG 3118	81.8	58.6+	118-	30-	0	0-	0	3	25	36	10
VA13W-38	81.7	58.3+	117-	31	0	1	0	1	12	18-	10
Dyna-Gro 9750	81.5	56.2-	119-	31	0	2	2	3	5	8-	1
VA12MAS7-519-1-3WS	81.5	55.8-	123+	32	1	1	0	1	55	51+	36
MAS #108	81.4	57.6	118-	31	1	1	0	3	50	58+	24
#Bullet	81.3	56.7-	122+	33	1	1	0	2			
SH 4400	81.1	57.6	123+	33	1	5+	2+	3	30	43	7
DH13SRW021-70	81	56.9-	120	30-	0	1-	0	1	15	38	8
MAS #7	81	57.4	119-	32	1	2	0	5+	40	59+	11
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
TX15D9597	81	58.5+	118-	33+	1	1	0	3+	45	63+	24
Armor Mayhem	80.9	57.6	121+	32	1	3	0	3	5	20-	3
VA16W-196	80.9	57.6	125+	29-	0	0-	0	1	25	37	6
MAS #67	80.8	56.4-	120	31-	0	2	0	2	5	7-	1
TX15D9253	80.8	55.8-	118-	32	1	1-	0	2	60	73+	26
13VTK434-89	80.6	59.5+	119-	35+	0	1-	0	2	15	39	6
15VDH-FHB-MAS33-30	80.6	59.7+	117-	31	1	0-	0	2	18	44	10
VA11MAS2-92-3-2-2	80.6	58.8+	123+	31	1	1-	2+	1	40	59+	10
MAS #316	80.4	57.1-	123+	33	1	4+	2	3	20	27-	8
VA17W-126	80.3	57.7	118-	34+	1	1-	0	2	25	33	12
VA11MAS2-68-4-1-3	80.2	58.5+	118-	27-	0	1-	0	1	25	29	9
CROPLAN CP8800	80.1	56.5-	121	33	0	1	1	2	30	37	8
KWS19X08	80	58.1	121+	33	0	1-	0	3	40	50+	14
SH 7200	80	58	118-	33	1	1-	0	3	60	72+	16
MAS #116	79.9	57.4	122+	34+	1	1	0	3	15	28	5
USG 3536	79.9	56.6-	121+	33	1	1	0	2	10	18-	4
Armor Venom	79.7-	57.8	121+	32	1	3	1	3	30	27	4
13VTK59-55	79.6-	58.7+	120	30-	0	1-	0	1	25	42	8
12VTK17-159	79.5-	57-	120	33	1	1	0	1	25	46	14
12VTK17-132	79.3-	58.5+	119-	32	0	1	0	1	30	36	11
DH13SRW025-14	79.2-	56.4-	118-	30-	0	0-	0	1	32	33	15
MBX 17-P-275	79.2-	56.3-	120	31	1	2	1	2	3	8-	2
14VDH-SRW06-207	79.1-	58.1	122+	32	1	0-	0	1	30	45	8
NC14-20369	79.1-	58.6+	119-	35+	2+	1-	0	1	28	46	13
VA12MAS11-779-5-2	79-	58.1	121+	32	1	2	0	1	45	43	12
TX15D9579	78.7-	57.1-	119-	33	0	0-	0	2	55	66+	23
12VTK17-55	78.4-	58.1	123+	31	0	0-	0	1	50	45	15
SY 576	77.9-	56.2-	125+	33+	0	1	4+	1	25	27-	7
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
AgriMAXX 480	77.8-	59.3+	117-	33	0	2	0	4+	30	50+	9
#Turbo	77.7-	56.7-	118-	32	0	2	0	1	15	36	6
SY 547	77.3-	57.8	120	33+	1	2	0	3	40	41	10
MAS #106	76.5-	57.8	115-	31	0	3	2+	3	8	8-	2
CROPLAN CP8550	76.2-	56.8-	122+	34+	1+	2	0	3+	18	25-	4
TX15D9608	76-	57.4	116-	30-	1	1-	0	4+	30	57+	19
GA09436-16LE12	75.9-	60.5+	119-	33+	1	0-	0	2	40	66+	26
MAS #6	75.9-	56.5-	120	30-	0	3+	0	4+	28	39	10
DH13SRW023-201	74.3-	61.3+	121+	33	0	1-	0	2	30	37	8
NC15-21834	72.8-	59+	121+	34+	1+	1-	0	2	25	40	13
NC13-21213	72.5-	58.3+	120	33	1	1	0	3	55	63+	15
Massey	72.4-	58.6+	120	34+	1	7+	0	1	22	37	6
NC14-23372	70-	59.3+	123+	33	1	1	0	3	25	44	14
mean	83.4	57.7	120.1	32	0.6	1.9	0.5	2	28	37.7	9.9
CV	7.6	1.3	0.5	5.2	201.8	42.9	125.2	37.1		14.6	
LSD	3.7	0.4	0.6	1.3	0.7	1.1	1.2	1.2		10.8	

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Table 3: Virginia State Official Variety Test across 6 locations in 2020.

	Grain Yield bu/a	Test Weight lb/bu	Date Headed Julian	Mature Height In	Plant Lodging 0-9	Leaf Rust 0-9	Powdery Mildew 0-9	Septoria 0-9	FDK ^a %	ISK ^b (1)	DON ^c ppm
Line	(6)	(6)	(2)	(3)	(5)	(2)	(1)	(1)	(1)	(1)	(1)
MAS #143	102.5+	58.7	121+	39	0	1	1	2	6	21	1
LCS 11719	100.2+	58.8	118	38	1	1	0	3	25	52+	5
MBX 127	100.1+	58.5	120+	39	0	2	1	2	9	17	1
USG 3790	100+	58.1	120+	38	0	2	0	3	25	56+	6
WX20731	99.1+	58.3	122+	39	1	1	1	2	6	22	1
LWX20C	98.4+	58.6	120+	40	0	2	1	1-	8	24	2
19-11	97.9+	58	120+	39	0	2	0	2	12	26	2
15VDH-FHB-MAS33-13	97.3+	59.9+	118	38	1	0-	3+	1-	6	11-	1
13VTK429-3	96.9+	59.4+	120+	40	0	0-	0	2	29	51+	7
19-10	96.8+	56.6-	121+	37-	0	2	0	3	19	24	4
LW2848	96.8+	58.4	122+	40	0	1	1	3	4-	30	2
PGX 18-8	96.8+	59.1	120+	37-	0	2	0	3	12	36	4
MAS1407-056-6-3	96+	59.9+	121+	40	0	1	2+	2	14	34	1
SY 547	95.8+	58.4	118	42+	0	1	0	3	20	36	2
Pioneer 26R45	95.5+	58.3	119+	39	1	1	0	3	8	36	1
MAS #136	95.4+	57.8-	122+	38	2+	3+	0	3	18	42	4
DH15SRW65-53	95.3+	59.5+	120+	36-	0	0-	1	3	25	46+	3
AgriMAXX 502	95.2+	58.6	116-	39	0	2	0	3	16	28	2
LWX20A	95.2+	57.2-	120+	38	0	4+	0	3	6	19	3
MAS #140	95.1+	58	121+	41+	0	2	2+	3	4-	17	1
#Blaze	94.6+	58.5	120+	39	1	4+	1	4	12	26	2
MAS #128	94.6+	57.7-	123+	37-	0	3+	2	4	30+	52+	3
L11919	94.5+	58.6	115-	38	1	0	1	2	25	31	2
mean	89.2	58.5	117.9	38.8	0.4	1.3	0.9	3.2	17.2	30.8	2.3
CV	8.8	2	0.9	4					35.6	23.6	
LSD	4.6	0.7	1.1	1.2	0.7	1	0.9	1.2	12.1	14.4	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Fusarium Diseased Kernels (percent).

^b ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^c Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	Septoria	FDK ^a	ISK ^b	DON ^c
PGX 18-7	94.5+	58.5	119+	40	0	1	1	3			
15VDH-FHB-MAS25-15	94.4+	60.1+	116-	37-	0	0-	2	3	11	18	2
16VDH-SRW03-023	94.4+	58.4	118	39	0	0-	1	2	16	44	3
AgriMAXX 473	94.4+	58.5	121+	40	0	0	0	2	6	29	2
Featherstone 125	94.4+	61+	118	40	0	0-	2+	3	10	22	1
MAS #316	94.4+	58.1	122+	40+	0	2+	2+	3	8	23	2
19-15	94.3+	59.2+	118	37-	1	1	2	4	16	47+	2
USG 3329	94.3+	58.1	119	39	1	3+	1	4	15	28	1
SY 576	94.1+	57.6-	126+	41+	0	1	3+	4	18	38	1
#Bullet	94+	58.3	121+	40	1	1	0	3			
MBX 223	94+	58.5	118	39	1	3+	0	4	15	28	1
CROPLAN CP9606	93.7	57.9	118	38	0	2	2	4	15	40	2
SY Viper	93.7	60.1+	114-	40+	1	2+	0	3	12	24	1
MAS #133	93.6	56.4-	120+	40	0	2+	1	3	11	30	2
VA17W-74	93.2	60+	116-	39	1	0-	0	3	14	25	1
VA17W-75	93.1	59.9+	117	40	0	0-	0	2	9	16-	1
SH 4400	93	58.9	121+	41+	0	2	2+	4	30+	51+	4
14VDH-SRW14-150	92.7	58.4	116-	39	0	0-	0	3	22	32	2
PGX 19-3	92.6	58.3	121+	40+	0	2	1	4	8	18	1
AgriMAXX 503	92.3	58	120+	40+	0	2	2+	3	12	18	1
EXP 2003	92.3	57.2-	119+	38	0	4+	0	3	4-	15-	2
WX20737	92.2	59.8+	117	38	0	2	0	3	12	20	2
15VTK-12-21	92	60.1+	121+	40	0	1	0	2	16	40	3
Dyna-Gro 9772	92	55.6-	120+	40	0	1	1	3	12	17	1
GA10268-17LE16	91.9	58.1	122+	39	5+	0-	0	3	52+	70+	10
WX19713	91.9	59.6+	120+	40	0	5+	1	3	12	27	2
GA10407-17E8	91.7	59.8+	118	39	1	0-	2+	4	30+	51+	3
MBX 246	91.6	59.1	120+	41+	0	2	1	3	10	16-	1
mean	89.2	58.5	117.9	38.8	0.4	1.3	0.9	3.2	17.2	30.8	2.3
CV	8.8	2	0.9	4					35.6	23.6	
LSD	4.6	0.7	1.1	1.2	0.7	1	0.9	1.2	12.1	14.4	
											continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Fusarium Diseased Kernels (percent).

^b ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^c Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	Septoria	FDK ^a	ISK ^b	DON ^c
13VTK59-55	91.5	59.3+	119	38-	0	0-	1	2-	12	35	2
USG 3316	91.4	58.7	120+	39	0	4+	5+	4	15	34	3
VA17W-176	91.3	58	117-	39	1	0-	2	3	32+	42	3
FL14167LDH-158	91.1	58.7	116-	41+	0	0	0	3	22	30	3
MBX 176	91	57.3-	120+	38	0	5+	0	3	9	20	2
15VDH-FHB-MAS34-18	90.9	60.6+	116-	38	0	0-	0	2-	9	14-	1
19-17	90.9	57.9	116-	35-	1+	0-	0	4			
MAS #86	90.9	57.4-	119+	41+	0	2	0	3	6	18	1
9070	90.6	58.3	117	39	0	2	0	3	16	26	3
12VTK4-118	90.4	59.5+	117	39	0	1	1	2	16	27	2
AgriMAXX 495	90.4	58.9	120+	39	0	1	1	3	12	35	2
SH 7510	90.1	58.5	119+	39	0	0-	1	3	22	48+	2
USG 3536	90.1	58.4	120+	39	1	1	0	3	8	21	4
KWS242	90	58.6	116-	39	0	5+	1	3	16	24	1
LW2958	90	58.9	120+	41+	0	2	0	3	10	24	2
19-12	89.9	56.7-	119	39	0	1	0	4	14	26	2
GA11656-17E11	89.9	60.5+	118	40+	1+	0-	1	3	35+	52+	5
MAS #35	89.6	58.6	121+	40	1	4+	2	3	18	32	2
Shirley	89.5	56.8-	119+	37-	0	0-	0	2-			
16VDH-SRW07-067	89.4	58.3	114-	35-	0	0-	0	4	15	22	3
Liberty 5658	89.1	59	117	40	0	1	1	5+	14	17	1
Pioneer 26R59	89	58.5	118	36-	0	2	1	2	38+	56+	3
Dyna-Gro 9932	88.8	59.1	120+	39	0	1	2	2	22	40	1
Dyna-Gro 9941	88.7	56.5-	119+	38	0	3+	2	3	15	22	2
Hilliard	88.7	58.5	117	41+	0	0-	0	3	16	25	3
SY 007	88.7	57.6-	116-	40	0	1	1	3	10	18	2
16VDH-SRW04-028	88.4	60.4+	116-	39	0	0-	0	3	15	20	1
13VTK59-148	88.3	59.3+	117-	40+	0	0-	1	3	12	23	2
mean	89.2	58.5	117.9	38.8	0.4	1.3	0.9	3.2	17.2	30.8	2.3
CV	8.8	2	0.9	4					35.6	23.6	
LSD	4.6	0.7	1.1	1.2	0.7	1	0.9	1.2	12.1	14.4	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Fusarium Diseased Kernels (percent).

^b ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^c Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	Septoria	FDK ^a	ISK ^b	DON ^c
MBX 17-M-245	88.2	57.7-	117-	38-	0	2	1	2	16	41	1
SY Richie	88.1	58.1	113-	37-	0	0	1	2	20	35	3
USG 3458	88	57.8-	118	38	0	2	1	3	20	47+	3
16VDH-SRW09-025	87.9	58.4	116-	41+	0	0-	0	2	22	39	3
AgriMAXX 505	87.9	59.5+	121+	39	0	4+	1	4	10	19	2
USG 3118	87.7	60.1+	113-	35-	1	0-	1	3	10	25	1
AgriMAXX Exp 1902	87.5	56.6-	120+	37-	0	2	3+	3	26	41	3
PGX 18-9	87.4	56-	120+	38	0	6+	0	3	4-	17	1
15VDH-FHB-MAS38-01	86.8	57-	112-	35-	0	0	0	4	5-	8-	2
VA16W-202	86.7	57.2-	114-	34-	0	0-	0	3			
MBX 969	86.4	56.5-	120+	38	0	2	2	3	8	18	1
15VDH-SRW02-075	86.2	58.6	120+	41+	0	0-	1	3	15	34	5
DH13SRW022-23	85.7	58.3	119+	36-	0	1	0	5+	15	28	1
Featherstone 31	85.7	58.6	120+	38	0	1	0	2	22	48+	3
FLLA10033C-6	85.7	57.2-	120+	42+	0	0-	1	4	40+	54+	6
16VDH-SRW05-205	85.4	58.4	117	37-	0	0-	0	3	30+	48+	5
MAS #130	85.3	58	116-	38	0	5+	0	4	20	28	1
EXP 2002	85.2	59	114-	40	0	2	1	4	8	11-	1
TX15D9579	85	58.6	115-	40	0	0-	0	3	22	39	2
USG 3221	84.9	59	114-	39	0	3+	1	4	12	12-	1
NC15-21834	84.8	59.9+	120+	42+	3+	0-	0	3	6	25	2
USG 3230	84.8	57.6-	118	38	0	2	1	4	22	42	2
AgriMAXX 415	84.7	59	118	39	0	2	2+	3	12	28	2
NC15-21835	84.7	59.6+	120+	42+	1+	0-	0	3	16	36	2
15VDH-FHB-MAS22-15	84.6-	60.1+	111-	35-	0	0-	0	3	18	30	2
CROPLAN CP8081	84.1-	58.6	118	39	0	1	3+	3	22	25	1
VA15W-86	84.1-	57.7-	114-	38	1	0-	0	3	15	24	2
9002	83.9-	57.8-	119	40+	0	2	3+	3	18	33	2
mean	89.2	58.5	117.9	38.8	0.4	1.3	0.9	3.2	17.2	30.8	2.3
CV	8.8	2	0.9	4					35.6	23.6	
LSD	4.6	0.7	1.1	1.2	0.7	1	0.9	1.2	12.1	14.4	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Fusarium Diseased Kernels (percent).

^b ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^c Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	Septoria	FDK ^a	ISK ^b	DON ^c
FL14078LDH-28	83.9-	60.2+	118	42+	1+	1	0	5+	50+	52+	5
USG 3895	83.7-	56.9-	118	38	0	1	3+	2	38+	58+	5
TX15D9597	83.2-	59.4+	115-	40	0	0	1	4	38+	54+	5
VA14HRW-25	82.9-	58.5	114-	41+	2+	0	1	5+	15	28	2
KWS333	82.7-	57.1-	116-	39	0	1	1	5+	10	18	1
Pioneer 26R10	82.6-	58.5	120+	40	0	3+	1	4	22	38	2
15VDH-FHB-MAS33-30	82.3-	61.1+	112-	37-	0	0	0	6+	8	15-	1
Laverne	82.2-	58.3	114-	33-	0	0-	1	4			
Berkeley	81.5-	57.8-	113-	38-	0	1	0	4			
TX15D9253	80.8-	56.2-	115-	40	2+	0-	1	5+	26	48+	6
SH 7200	80.7-	59	114-	39	1+	0-	1	2	30+	34	3
PGX 18-11	79.7-	58.5	113-	37-	0	0-	0	3	15	24	4
16VDH-SRW06-131	78.7-	59.2	113-	37-	1	1	1	3	12	15-	1
MAS #67	77.9-	56.5-	118	38	0	2	2+	3	3-	18	1
PGX 18-2	77.9-	58.2	117	38	0	0-	0	4	16	19	2
AgriMAXX 492	77.6-	59.5+	114-	38	0	0-	0	7+	11	18	1
FL15105-LDH145	76.5-	59.8+	114-	39	0	0-	1	3	10	14-	1
15VDH-FHB-MAS25-08	76.4-	59.2+	112-	37-	0	0-	1	4	3-	6-	2
FL15105-LDH110	76-	59.8+	114-	38	0	0-	0	3	8	8-	1
NC11546-14	74.8-	59.8+	117	39	1	0-	0	4	8	16	1
MAS #106	73.9-	58.3	112-	37-	0	1	3+	4	3-	7-	0
Massey	65.7-	58.7	118	42+	2+	7+	0	3	22	27	2
mean	89.2	58.5	117.9	38.8	0.4	1.3	0.9	3.2	17.2	30.8	2.3
CV	8.8	2	0.9	4					35.6	23.6	
LSD	4.6	0.7	1.1	1.2	0.7	1	0.9	1.2	12.1	14.4	

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Fusarium Diseased Kernels (percent).

^b ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^c Deoxynivalenol concentration in the kernels (ppm).

Table 4: Virginia State Official Variety Test across 7 locations, 2021

	Grain Yield bu/a	Test Weight lb/bu	Date Headed Julian	Mature Height in	Plant Lodging 0-9	Leaf Rust 0-9	Powdery Mildew 0-9	BYD ^a Virus 0-9	FDK ^b %	ISK ^c (1)	DON ^d ppm
Line	(7)	(7)	(2)	(3)	(7)	(7)	(1)	(2)	(1)	(1)	(1)
USG EXP 3000	90.8+	59.5+	125	33	0	0	0	2	28	23	1
Dyna-Gro 9002	89.1+	57.7-	125	34	0	2	0	0	4-	14	0
AgriMAXX 514	88.8+	57.4-	125	33	0	2	0	4+	14	11-	1
USG 3451	88.7+	59.8+	123-	34+	0	0	0	0	25	40+	1
15VDH-FHB-MAS38-01	88.6+	58.1-	120-	31-	0	0	0	0	5-	11-	1
CPX91221	88.6+	60+	125+	33	0	3	1+	1	25	37+	4
VA19FHB-05	88.3+	59.4+	123-	35+	0	4+	0	0	5-	11-	1
USG 3472	88+	58.4-	125+	34	0	2	0	0	14	12-	1
CP8045	87.9+	58.4-	125+	33	0	3	0	1	18	13	2
Dyna-Gro 9120	87.6+	60.4+	123-	32-	0	2	0	3	12	23	2
MAS #86	87.6+	57.2-	124	35+	0	4+	0	2	15	12-	0
Progeny #CHAD	87.5+	57.9-	124	31-	1+	0	0	1	11	28	1
VA19W-29	87.5+	58.7	124	34	0	2	0	3	35+	32	3
VA19W-79	87.2+	59.2	122-	35+	0	0	0	0	35+	38+	8
14VDH-SRW14-150	86.8+	58.8	122-	34	0	0	0	2	18	34	2
Laverne	86.8+	58.5	121-	28-	0	0	0	0	35+	50+	1
MAS1407-056-6-3	86.8+	59.9+	126+	35+	0	0	0	0	16	15	3
MBX 120	86.6+	59.1	128+	33	0	2	0	3	22	21	1
Dyna-Gro WX20734	86.5+	58.7	128+	33	0	2	0	3	14	26	2
USG 3329	86.5+	58.2-	124-	34	0	4+	0	1	12	17	0
VA17W-75	86.3+	59.7+	119-	33	0+	0	0	2	18	16	1
Dyna-Gro 9172	86.2+	58.4-	125	33	0	2	0	2	11	13	2
Shirley	86.2+	57.6-	125	32-	0	1	0	1	28	47+	1
mean	81.9	58.8	124.5	33.2	0.1	1.4	0.1	1.7	19	24.4	1.6
CV	8.8	1.1	0.6	4					32.1	25	
LSD	3.9	0.4	0.8	1.1	0.3	1.7	0.5	1.9	12.1	12.1	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf^b Fusarium Diseased Kernels (percent).^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
16VTK19-201	86+	59.6+	122-	34	0	0	0	1	9	10-	1
DH16-SRW120-064	86+	59.5+	125	30-	0	0	0	1	22	33	1
SH 9520	86+	59.1	128+	33	0	2	0	3	24	31	3
Hilliard	85.9+	58.7	124	35+	0	0	0	1	18	22	3
16VDH-SRW03-023	85.7	58.3-	124	34+	0	0	0	0	25	34	1
Pioneer 26R59	85.6	58.6	124	29-	0	2	0	3	18	46+	2
PROGENY 19-10	85.6	57.4-	126+	32-	0	2	0	2	18	16	2
LW2169	85.5	58.5	125	32	0	2	0	0	20	14	2
FS 601	85.2	57.2-	125	33	0	2	0	1	11	25	0
MAS #143	85.1	58.2-	125+	33	0	2	0	0	22	21	2
16VDH-SRW09-025	84.7	58.8	124	34+	0	0	0	1	15	27	2
17VDH-SRW03-143	84.7	60.9+	123-	34	0	0	0	2	18	13	2
15VTK-1-101	84.6	58.7	125+	29-	0	0	0	0	22	24	3
14VDH-HRW02-029	84.5	59.2+	126+	33	0	0	0	2	18	16	0
SY 100	84.4	56.8-	126+	32-	0	2	0	4+	30	42+	6
FS WX21B	84.3	58.3-	125+	33	0	3	0	0	11	16	1
17VDH-SRW05-170	84.2	58.3-	125+	32-	0	0	0	1	11	19	2
DH13SRW022-216	84.1	59.3+	126+	34	0	0	0	1	15	18	0
AgriMAXX 492	84	60.1+	123-	33	0	0	0	0	14	26	1
DH13SRW022-23	84	59.1	126+	33	0	0	0	0	15	21	1
SY Viper	84	59.6+	124-	36+	1+	3	0	0	8	30	1
15VDH-FHB-MAS33-13	83.9	59	124	33	0	0	0	1	4-	8-	0
DH15SRW65-53	83.9	59.9+	125+	30-	0	0	0	1	38+	39+	4
16VDH-SRW03-018	83.8	60.3+	123-	34	0	0	0	1	18	19	2
AgriMAXX 513	83.8	58.7	125	33	0	2	0	2	25	19	0
MAS #316	83.8	57.9-	126+	35+	0	4+	0	4+	14	8-	1
15VDH-FHB-MAS25-15	83.6	59.1	123-	32-	0	0	0	1	11	13	1
Dyna-Gro 9151	83.6	59.9+	125+	33	0	4+	0	4+	6-	14	1
mean	81.9	58.8	124.5	33.2	0.1	1.4	0.1	1.7	19	24.4	1.6
CV	8.8	1.1	0.6	4					32.1	25	
LSD	3.9	0.4	0.8	1.1	0.3	1.7	0.5	1.9	12.1	12.1	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
PROGENY PGX 20-2	83.6	61.1+	123-	34	1+	2	0	1	12	32	0
13VTK59-55	83.5	59.8+	124	33	0	0	0	0	10	25	1
AgriMAXX 516	83.5	58.4-	125+	32	0	4+	0	1	10	10-	3
13VTK429-3	83.4	59.8+	125+	34	0	0	0	1	14	17	2
Dyna-Gro WX21741	83.4	58.6	125	35+	0	2	0	2	25	16	1
VA17W-74	83.3	59.8+	119-	34	0+	0	0	2	9	16	1
AgriMAXX 473	83.2	57.9-	125	34	0	0	0	3	5-	17	1
KWS340	83.1	59.3+	126+	33	0	0	0	2	14	17	1
AgriMAXX 505	83	60.2+	125	34	0	4+	0	5+	12	17	1
Featherstone 125	83	60.7+	126+	34	0	0	0	0	18	16	2
AgriMAXX 502	82.9	58.3-	124	33	0	2	0	5+	10	21	2
MBX 127	82.9	58.1-	125+	33	0	2	0	1	10	13	2
KWS263	82.8	57.5-	126+	34	0	0	0	1	22	24	2
MAS #139	82.7	57.5-	126+	31-	0	5+	0	3	42+	32	1
DH15SRW67-151	82.6	58-	127+	31-	0	0	0	1	16	15	1
USG 3118	82.6	59.4+	123-	31-	0	0	0	1	18	28	1
USG 3536	82.5	58.4	125	34	0	1	0	3	18	31	1
Progeny #BULLET	82.4	58.2-	125	35+	0	0	0	2	15	18	0
SY Richie	82.4	58.9	122-	32	0	0	0	0	25	46+	3
Pioneer 26R36	82.1	58.7	126+	33	0	0	1+	2	11	10-	1
SH 7200	82	60+	122-	35+	0	0	0	4+	42+	50+	2
Dyna-Gro 9070	81.9	58.4-	124	33	0	4+	0	2	6-	12-	1
MBX 17-M-245	81.9	57.6-	123-	32-	0	2	0	3	32+	37+	1
Progeny #BUSTER	81.5	58.9	125+	33	0	2	0	1	28	23	3
Liberty 5658	81.4	59.6+	123-	34	0	0	0	0	12	23	3
FS 875	81.3	57.6-	124	34	0	4+	0	1	18	16	0
MBX 246	81.3	58.9	125+	34+	0	2	0	3	18	16	1
MBX 223	81.2	57.8-	124	33	0	2	0	3	22	21	2
mean	81.9	58.8	124.5	33.2	0.1	1.4	0.1	1.7	19	24.4	1.6
CV	8.8	1.1	0.6	4					32.1	25	
LSD	3.9	0.4	0.8	1.1	0.3	1.7	0.5	1.9	12.1	12.1	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
SREXP117	81.2	56.8-	123-	30-	0	1	0	0	8	33	1
SY 007	81.2	58.4-	123-	34	0	1	0	1	18	19	1
USG 3232	81.2	59.5+	122-	32	0	0	0	1	6-	15	0
MAS #133	81.1	56.1-	126+	33	0	4+	0	3	12	23	1
Dyna-Gro WX20738	81	58.4-	125	34	0	0	0	5+	18	25	1
VA19W-89	81	57.9-	123-	34	0	0	0	3	10	16	1
FS 624	80.9	58.7	126+	34+	0	4+	0	5+	8	21	1
SH 4400	80.8	59.1	127+	35+	0	2	1+	2	15	21	0
CP8118	80.7	57.3-	123-	30-	0	0	0	1	11	31	1
16VDH-SRW05-205	80.5	59.1	124	31-	0	0	0	2	16	24	2
AgriMAXX Exp 2002	80.5	59.5+	122-	32	0	0	0	1	18	25	1
Pioneer 26R45	80.4	58-	124	34	0	1	0	2	15	30	0
USG 3562	80.3	58.8	125+	34	0	2	0	1	10	16	1
USG 3316	80.2	58.4-	126+	34	0	6+	0	1	12	11-	0
GA10127-18E26	79.9	60+	127+	32	0	0	1+	0	32+	25	6
LW2068	79.7	57.8-	125	34	0	6+	0	2	10	10-	2
FS 891	79.6	58.6	125	33	0	3	0	3	25	34	2
15VDH-SRW02-075	79.5	59.9+	126+	35+	0	0	0	1	28	26	2
MAS #67	79.4	57.1-	124-	32-	0	2	0	1	15	24	0
Hardy 2519	79.3	59.8+	124	36+	0	0	0	1	14	26	1
MBX 176	79.2	57.7-	126+	33	0	4+	0	5+	18	13	1
VA19W-31	79.2	59.7+	124	33	1+	0	0	3	22	42+	1
SY 547	79.1	58.3-	123-	35+	0	1	0	2	18	19	1
LW2958	78.2	59	125	35+	0	2	0	1	18	16	1
MBX 242	77.8-	58.6	125	34	0	0	0	3	20	17	1
VA14HRW-41	77.7-	58.6	126+	35+	0	0	0	1	25	19	1
AgriMAXX 503	77.5-	58.7	126+	34	0+	2	0	1	4-	14	0
USG 3230	77.4-	57.7-	123-	33	0	1	0	1	40+	37+	4
mean	81.9	58.8	124.5	33.2	0.1	1.4	0.1	1.7	19	24.4	1.6
CV	8.8	1.1	0.6	4					32.1	25	
LSD	3.9	0.4	0.8	1.1	0.3	1.7	0.5	1.9	12.1	12.1	

continued ...

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Line	Grain Yield	Test Weight	Date Headed	Mature Height	Plant Lodging	Leaf Rust	Powdery Mildew	BYD ^a Virus	FDK ^b	ISK ^c	DON ^d
LW2848	77.1-	57.9-	125	34+	0	0	0	2	28	29	1
AgriMAXX Exp 2019 HRW	77-	61.4+	127+	30-	0	0	1+	5+	30	42+	2
SH 9310	77-	60.7+	123-	32	0	0	0	2	28	41+	2
VA19W-24	77-	59.3+	124	33	0	0	0	1	25	31	2
FS 878	76.6-	56.9-	124	32-	0	3	0	1	22	33	1
Progeny #BERKELEY	76.6-	58.7	123-	32	0	0	0	1	14	32	1
GA15VDH-FHB-MAS30-18ESc43F	76.3-	58.5	123-	31-	0	0	0	3	22	24	1
MAS #2	76.3-	59.6+	126+	38+	2+	1	0	2	42+	26	0
AgriMAXX Exp 2020 HRW	76.1-	60.4+	126+	31-	0	0	0	5+	25	40+	3
LW2148	75.5-	58.4-	126+	34	0+	4+	0	1	12	29	0
SY 576	75.5-	57.5-	129+	33	0	0	0	2	55+	31	4
KWS380	75.4-	59	125	32-	0	4+	0	3	15	18	2
FLLA10033C-6	75-	58.7	125	35+	0	0	0	4+	50+	32	4
NC12164-200T	74.4-	60.7+	124	33	0	1	0	1	30	39+	3
NC12642-81	74.4-	60.1+	122-	35+	0	2	0	2	16	33	0
MAS #106	74.2-	58.6	118-	32	1+	3	0	1	15	30	1
FL14167LDH-158	73.4-	58.9	125	35+	0	0	0	2	30	18	1
GA15VDH-FHB-MAS23-18LE43F	73.4-	59.3+	126+	31-	0	0	0	2	25	25	2
NC12164-97T	70.6-	60.2+	124	36+	1+	1	0	1	18	37+	1
Massey	70.4-	59.1	124	38+	1+	8+	0	1	8	6-	0
NC11546-14	69.9-	60+	124	34	0	0	0	3	20	20	0
FLLA11004-7	67.4-	57.9-	128+	36+	0	0	0	1	30	36	2
mean	81.9	58.8	124.5	33.2	0.1	1.4	0.1	1.7	19	24.4	1.6
CV	8.8	1.1	0.6	4					32.1	25	
LSD	3.9	0.4	0.8	1.1	0.3	1.7	0.5	1.9	12.1	12.1	

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.

Parentheses below column headings indicate the number of site-years in which data were collected.

^a Barley Yellow Dwarf

^b Fusarium Diseased Kernels (percent).

^c ISK Index = $(0.3 \times \text{FHB Incidence} + 0.3 \times \text{FHB Severity} + 0.4 \times \text{Fusarium damaged kernels}) / 100$.

^d Deoxynivalenol concentration in the kernels (ppm).

Table 5: Performance of VA17W-75 in the 2019 Mason Dixon Trial (KY, NC, VA)

	Yield % mean	Yield Rank	Grain bu/ac	Test Weight lb/bu	Heading Date Jan 1	Plant Height in	Plant Lodging 0-9	S.nod leaves 0-9	Leaf Rust 0-9	Stripe Rust 0-9	BYD ^a Virus 0-9
Line	(5)	(5)	(5)	(5)	(4)	(5)	(2)	(2)	(1)	(1)	(1)
VA17W-75	119	1	88.3+	60.2	116	33	1	5	2	4	0
Shirley	117	2	87+	56.7	118	30-	1	4	1	9	0
Pioneer 26R59	116	3	86	56.8	118	29-	0	4	6	4	1
Hilliard	113	7	83.8	57.7	116	33	1	4	2	2	0
mean			74.4	57.8	117.7	32.3	0.8	4.6	2	6	0
CV			12.8	3.8	1.7	4.1	40.3	18.2	52		226
LSD			11.8	2.7	2.8	1.7	0.7	1.7	2		1

	Hessian Fly ^d	S. tritici Leaf Blotch 0-9	S.nod glumes 0-9	FDK ^b %	DON ^c ppm
Line	(1)	(1)	(1)	(1)	(1)
VA17W-75	BCD	4	3.25	10	5.12
Shirley	None	5	3.50	35	9.96
Pioneer 26R59	O	6	2.75	30	3.76
Hilliard	BCD	4	3.25	25	6.44
mean		6	3.10		
CV		11	31.20		
LSD		1	1.50		

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.

^aBarley Yellow Dwarf

^bFusarium Diseased Kernels (percent)

^cDeoxynivalenol concentration in the kernels (ppm)

^dLetters indicate resistance to Hessian fly biotypes, B, C, D, O, L

Table 6: Performance of VA17W-75 in the 2019 Gulf Atlantic Nursery (AR, GA, LA, NC, SC, TX, VA)

Line	Yield % mean (8)	Yield Rank (8)	Grain Yield bu/ac (8)	Test Weight lb/bu (5)	Heading Date Jan 1 (7)	Plant Height in (7)	Plant Lodging (0-9) (2)
VA17W-75	108	8.0	65.9	57.3	102	34	1
Hilliard	108	9.0	65.7	57.8	107	34	1
AGS3030	100	25.0	61	58.1	102	34	1
Pioneer 26R41	100	27.5	60.6	57.1	108+	33	
SS8641	98	29.0	59.9	57.3	104	35	1
mean			60.9	58	104.1	34.7	1.4
CV			14.2	2.5	2.7	6.8	30.2
LSD			8.5	1.8	3	2.5	0.9

Line	Stripe				BYD ^c (0-9) (1)	Hessian Fly ^d (0-9) (1)	
	Rust (0-9) (4)	Septoria (0-9) (2)	FHB ^a (0-9) (5)	FDK ^b % (3)			
	DON ^d ppm (2)	Virus (0-9) (1)					
VA17W-75	1	4	2	27	7	0	BCDO
Hilliard	1	3	2-	45	21	0	BCD
AGS3030	1	4	4	55	10	0	BCDOL
Pioneer 26R41	1	4	2-	40	18	1	
SS8641	2	2	6+	87+	20	3	BCDO
mean	2	3.3	3.5	46	18.4	1	
CV	61.7	37.4	30	29.4	59.3		
LSD	1.7	2.5	1.3	21.9	21.9		

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.

^aFusarium head blight Index = (Incidence \times Severity)/100.

^bFusarium Diseased Kernels (percent).

^cDeoxynivalenol concentration in the kernels (ppm).

^dBarley Yellow Dwarf

^eLetters indicate resistance to Hessian fly biotypes, B, C, D, O, L

Table 7: Performance of VA17W-75 across 19 locations in the 2020 Uniform Eastern Soft Winter Wheat Nursery.

Line	Yield bu/a (19)	Yield rank (19)	Test Weight lb/bu (17)	Heading Julian (16)	Date (15)	Height in (15)	FHB score 1-9 (4)	S.nod Leaves 1-9 (4)
KWS291	1	85.4+	56.5	134+	34	4	3	
IL15-2639	2	84.5+	58.6+	132+	36+	1-	3	
KWS280	3	81.6+	58.5	133+	31-	4	3	
Pioneer Brand 25R46	4	80.3	58	131	34	1-	2	
VA17W-75	5	79.4	58.6+	129	34	3	2	
KY06C-1178-16-10-3-34	6	79.1	57.4	131	35+	3	2	
LES170022	7	77.1	57.7	129	35	3	4	
MI16R0906	8	77	54.4-	131	33-	6+	3	
Hilliard	9	76.9	57.2	130	35+	4	3	
KWS283	10	76.8	56.5	130	32-	4	5	
13VTK59-55	11	76.7	58.5	130	32-	4	4	
X11-0420-120-13-3	12	76.3	57.2	131	36+	3	4	
Branson	13	75.7	56.1-	129	34	6+	5	
MI16R0742	14	75.6	57.9	131	35	5	4	
VA16W-202	15	74.9	56.3	128-	31-	5	5	
IL14-DC-64-95-118	16	74.7	58.5	130	34	3	4	
B16#12-9448	17	74.7	57.2	130	31-	3	2	
LES175560	18	74.7	56.5	129	33	4	5	
KY07C-1145-94-12-5	19	74.6	58	129	34	4	5	
ARFHBDH2_75	20	74.4	57.7	130	32-	4	3	
TWR 99009	21	72.8	57.4	129	36+	4	5	
TWR 99015	22	72.8	57.6	130	36+	4	5	
GA15VDH-FHB-MAS10-18LEDH16F	23	72.4	59+	130	34	2-	2	
MI16R0720	24	71.7	53.9-	130	33-	6+	5	
M16*7401L	25	71.4	57.8	128-	36+	3	4	
TWR 99011	26	70.5	56.8	131	36+	4	5	
MO080104	27	70	57.9	129	36+	2-	4	
IL15-27270	28	69.7	58.6+	130	33-	2	6	
GA111007-18E45	29	64.8-	57.3	128-	32-	7+	5	
Mean		75.4	57.4	130.1	33.8	3.7	3.8	
LSD (0.05)		5.8	1.1	1.4	1.1	1.9	2.3	
CV (%)		10.1	2.5	1.3	4	29.9	35.2	

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: Performance of VA17W-75 in each of 19 locations in the 2020 Uniform Eastern Soft Winter Wheat Nursery.

Line	ARB [†] % mean	ARB rank	ARB bu/ac	ARM % mean	ARM rank	ARM bu/ac	ILC % mean	ILC rank	ILC bu/ac	ILH % mean	ILH rank	ILH bu/ac	ILN % mean	ILN rank	ILN bu/ac
Pioneer 25R46	118	5	61	105	12	70	98	22	91	121	2	80	123	1	74
VA17W-75	116	6	60	97	17	65	103	6	95	116	3	77	117	3	70
Hilliard	140	2	73	100	16	67	99	20	91	107	9	71	96	20	57
Branson	90	18	47	88	20	59	105	3	97	114	4	76	100	12	60
MO080104	83	24	43	80	27	53	93	27	86	100	14	66	88	24	53
mean							67						66		60
LSD							9						7		15
CV							6						5		15

Line	ILU % mean	ILU rank	ILU bu/ac	INB % mean	INB rank	INB bu/ac	INL % mean	INL rank	INL bu/ac	INW % mean	INW rank	INW bu/ac	MDC % mean	MDC rank	MDC bu/ac
Pioneer 25R46	110	2	84	94	22	90	116	5	87	114	4	78	108	8	97
VA17W-75	102	10	78	104	6	100	94	20	71	107	11	74	98	18	88
Hilliard	101	12	77	95	21	92	105	9	79	113	5	78	103	12	92
Branson	106	7	81	109	5	105	93	21	70	113	6	77	102	13	91
MO080104	96	23	73	99	16	95	90	23	68	80	27	55	95	19	86
mean							96						69		90
LSD							10								16
CV							8								11

Line	MIM % mean	MIM rank	MIM bu/ac	NCR % mean	NCR rank	NCR bu/ac	NEL % mean	NEL rank	NEL bu/ac	NYI % mean	NYI rank	NYI bu/ac	OHN % mean	OHN rank	OHN bu/ac
Pioneer 25R46	107	9	94	122	2	88	101	16	40	101	13	119	102	10	71
VA17W-75	98	21	86	83	28	59	108	7	43	107	7	126	100	14	69
Hilliard	85	26	75	116	3	83	93	22	37	107	5	126	92	26	63
Branson	106	10	93	86	26	62	86	25	35	107	6	126	97	20	67
MO080104	103	15	91	108	5	77	97	19	39	101	15	118	85	29	59
mean							72						118		69
LSD							20						9		7
CV							11						4		5

Line	OHR % mean	OHR rank	OHR bu/ac	TNM % mean	TNM rank	TNM bu/ac	VAB % mean	VAB rank	VAB bu/ac	VAW % mean	VAW rank	VAW bu/ac
Pioneer 25R46	112	3	82	103	13	62	90	29	66	94	24	92
VA17W-75	108	5	79	117	5	71	110	4	80	120	1	117
Hilliard	91	25	67	98	19	59	96	18	70	105	7	103
Branson	91	26	66	91	23	55	104	8	75	98	17	96
MO080104	91	27	66	64	29	38	96	20	70	97	20	95
mean							60					
LSD							12					
CV							10					

[†]Location abbreviations indicate the state abbreviation (first two letters) and city (last letter).

Table 9: Performance of VA17W-75 in the Uniform Southern Scab Nursery in 2019.

Line	FHB Rating ^a	FHB incidence ^b	FHB severity ^c	FHB index ^d	FDK ^e	ISK ^f	DON ^g
JAMESTOWN	3	67	29	18	21	38	4
ERNIE	3	61	22	15	17	33	5
BESS	3	71	30	21	16	36	5
VA17W-75	4	73	33	23	20	42	5
NC14-23372	3	79	29	24	26	39	9
COKER9835	7+	99	65+	65+	68+	74+	16
AGS 2035	6	92	44	41	49+	56	16
SS 8641	8+	97	72+	70+	76+	73+	20+
mean	3.9	76.5	39	30.7	29	43	8
CV	30.6	16.1	26.9	36.7	34.4	16.6	50.7
LSD	2.6	24.3	21	22.3	19.4	14	8

^aFusarium head blight Rating is a 0-9 visual score^bFusarium head blight Incidence is the percent of heads with some visual disease^cFusarium head blight Severity is the average severity of head infection^dFusarium head blight Index = (Incidence × Severity)/100^eFusarium Diseased Kernels (percent)^fISK Index = (0.3 × FHB Incidence + 0.3 × FHB Severity + 0.4 × Fusarium damaged kernels) / 100^gDeoxynivalenol concentration in the kernels (ppm)**Table 10:** Milling and Baking quality measures for VA17W-75 grown in Lanexa VA in 2021.

Line	N	Grain Protein	Kernel Hardness (%)	Test Weight (lb/bu)	Flour Yield (%)	Softness Equiv. (%)	Flour.1 Protein (%)	Water SRC (%)	Sodium Carb. SRC (%)	Sucrose SRC (%)	Cookie Diameter (cm)
13VTK59-55	3-9	10.1	29.4	61.8	67.7	52.8	8.3	57	72.8	93.8	18.5
DH15SRW65-53	1-3	10.3	22	61.6	68.4	53.2	8.4	54.6	67.3	89.6	19.2
16VDH-SRW03-023	1-4	10.1	18	59.1	68.3	56.8	7.9	56.9	71.6	97.1	18.8
VA17W-75	3-11	10.4	31.8	61.4	66.8	53.6	8.2	58.6	77.7	105.9	17.7
Branson*	75-311	10.6	6	59.8	69.2	61.6	8.3	52.3	66.9	91.2	18.8
Hilliard*	8-124	10.5	15.1	59.8	66.9	59.6	8.1	55	73.3	100.6	18.4