

SOUTHERN UNIFORM WINTER WHEAT SCAB NURSERY

2020 NURSERY REPORT

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This is a progress report of cooperative investigations underway and funded by the U. S. Wheat and Barley Scab Initiative, State Agricultural Experiment Stations, private companies and the United States Department of Agriculture, Agricultural Research Service. This report contains preliminary data that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is a tool for the use of the Cooperator and their official staff and those persons having direct interest in the development of agricultural research programs. This report is not intended for publication and should not be referred to in literature citations or quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the authors.

ACKNOWLEDGEMENT AND DISCLAIMER

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LOCATION NOTES

Florence, South Carolina,

- Cooperator: Rick Boyles
- Clemson University

Griffin, Georgia

- Cooperator: Mohamed Mergoum.
- University of Georgia.

Winnsboro, Alexandria and Baton Rouge, Louisiana.

- Cooperator: Stephen Harrison.
- Louisiana State University

Fayetteville and Newport, Arkansas

- Cooperator: Esten Mason.
- University of Arkansas.

Kinston, North Carolina

- Cooperator: Paul Murphy
- North Carolina State University

Warsaw, Virginia

- Cooperator: Carl A. Griffey.
- Virginia Tech.

Champaign, Illinois

- Cooperator: Jana Murche
- KWS Cereals USA.

Urbana, Illinois

- Cooperator: Jessica Rutkoski.
- University of Illinois.

Lexington, Kentucky

- Cooperator: Dave Van Sanford.
- University of Kentucky.

Raleigh, North Carolina

- Cooperator: Gina Brown-Guedira.
- USDA-ARS Eastern Regional Small Grains Genotyping Lab

West Lafayette, Indiana

- Cooperator: Sue Cambron.
- USDA-ARS Crop Production and Pest Control Research Unit:

Wooster, Ohio

- Cooperator: Byung-Kee Baik
- USDA-ARS Soft Wheat Quality Laboratory



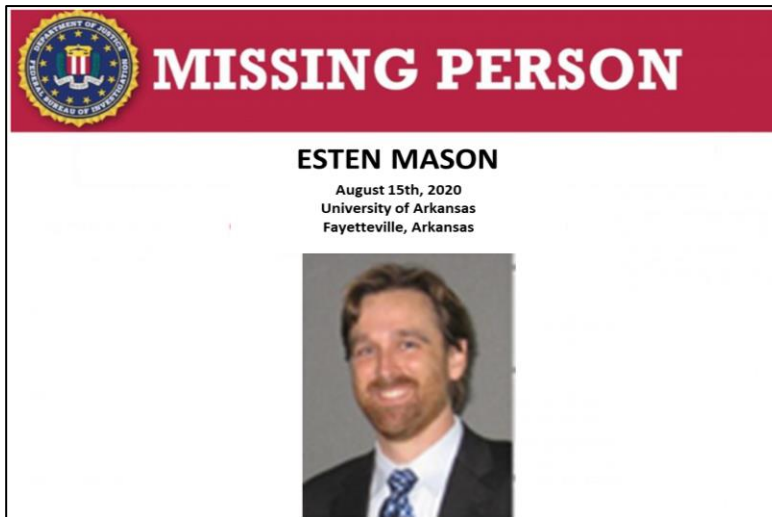
Scab Nursery, Florence, SC



Doubled Haploid population.
This is what $2\sigma^2_A$ looks like.



Winnsboro, LA.
Nursery and Scabby Seed



Entry List and Pedigrees, 2020 Nursery

ENTRY NO	CULTIVAR/ DESIGNATION	PEDIGREE	CONTRIBUTOR	IN NURSERY SINCE
1	ERNIE	Check	CHECK(RES)	1999-00
2	COKER9835	Check	CHECK(SUS)	2000-01
3	BESS	MO11769/Madison	CHECK(RES)	2006-07
4	JAMESTOWN	Roane / Pioneer 2691	CHECK(RES)	2007-08
5	SS 8641	881130/2*881582 (formally GA96229-3A4)	CHECK(SUS)	2018-19
6	Pioneer 26R46	Check	CHECK(SUS)	2018-19
7	NC11546-14	AGS 2027 / NC09-20986	Murphy	2018-19
8	NC12642-81	NC09-20986 / Hilliard	Murphy	2018-19
9	NC15-21834	NCD1AG11(Pm37-76 / P26R12 // Jamestown	Murphy	2018-19
10	NC15-21835	NCD1AG11(Pm37-76 / P26R12 // Jamestown	Murphy	2018-19
11	NC16-19449	NC06-19896 / NC08-140	Murphy	2019-20
12	NC11363-25	Jamestown / NC09-22206	Murphy	2019-20
13	NC12164-94	NC8170-4-3 / Jamestown	Murphy	2019-20
14	NC12193-49	Shirley / NC09-20986	Murphy	2019-20
15	AR12002-0024N	10-1443/LA06146E-P03-1134	Mason	2019-20
16	AR12486-2417N	VA09W-75/LA03118E117	Mason	2019-20
17	AR12486-2419N	VA09W-75/LA03118E117	Mason	2019-20
18	AR12486-2420N	VA09W-75/LA03118E117	Mason	2019-20
19	AR15V21-09-2089N	MD08-26-H2-7-12-9 [SS8641//McCormick*2/ Ning7840] / VA09W-73 (SS520/VA99W-188// TRIBUTE) // VA12W-54 [NC00-15389/GF951079-2E31//USG3555(VA02W-555)	Mason	2019-20
20	AR15V31-26-2285N	MD08-26-H2-7-12-9 [SS8641//McCormick*2/ Ning7840] / VA11W-278 (NC00-15389/GF951079-2E31 //USG3555(VA02W-555) // HILLIARD	Mason	2019-20
21	AR15V41-10-2443N	MDC07027-12-24 [SS8641//McCormick*2/ Ning7840] / HILLIARD (VA11W-108) // VA11W-278 (NC00-15389/GF951079-2E31 //USG3555(VA02W-555)	Mason	2019-20
22	ARNCDH12753-103-1536M	GA041293-11LE37 / Hilliard	Mason	2019-20
23	GAFHBMAS14031-201	LA05102C8-8/13220 (10LE34 / MD08-26-H2-7-12-9)	Mergoum	2019-20
24	GA151313-LDH127-19E36	AGS 2024 / PIO26R41 // JT141	Mergoum	2019-20
25	GA151313-LDH224-19E38	AGS 2024 / PIO26R41 // JT141	Mergoum	2019-20
26	GA10457-19LE13	031134-6-2-6 / IL 97-1828	Mergoum	2019-20
27	GANC12642-12-19LE16	NC09-20986 / Hilliard	Mergoum	2019-20
28	GA15328-18E52F	15328-G10(101153-3-G2*2/3/LCS 343*2/10041//12066)	Mergoum	2019-20
29	KWS216	VA10W-119 / SY Harrison	Murche	2019-20
30	KWS238	Featherstone73 / Hilliard	Murche	2019-20
31	KWS246	SE05 1182-32 / Z10-40	Murche	2019-20
32	KWS263	SY Harrison / VA08W-176	Murche	2019-20
33	KWS333	KWS072 / KWS074	Murche	2019-20
34	LA13045D-173	GA041293-11LE37/MD08-26-H2-7-12-21	Harrison	2019-20
35	LA13045D-160	GA041293-11LE37/MD08-26-H2-7-12-21	Harrison	2019-20
36	LA13181D-151A	MD08-26-H2-7-12-21/LA12056, F1(TERRAL LA754/VA09W-75)	Harrison	2019-20
37	LA15166LDH296	SAVOY/HILLIARD	Harrison	2019-20
38	LA15203LDH075	AGS3000/HILLIARD	Harrison	2019-20
39	LA15VDH-FHB-MAS10-16	MD08-26-H2-7-12-9 / 12V51	Harrison	2019-20
40	LANC9337-63-4	Jamestown / SS8641	Harrison	2019-20
41	15VDH-FHB-MAS22-14	MD08-26-H2-7-12-9 [SS8641//McCormick*2/ Ning7840] / Featherstone 73 (VA09W-73) // USG 3118"S" (VA12W-54)	Griffey	2019-20
42	15VDH-FHB-MAS38-01	MD08-26-H2-7-12-9 [SS8641//McCormick*2/ Ning7840] / USG 3118"S" (VA11W-278) // VA12W-150 (IL99-15867/ JAMESTOWN)	Griffey	2019-20
43	15VDH-FHB-MAS17-23	MD08-26-H2-7-12-9 [SS8641//McCormick*2/ Ning7840] / 12V51 (VA05W-251) // VA12W-150 (IL99-15867 / JAMESTOWN)	Griffey	2019-20
44	15VDH-FHB-MAS34-18	HILLIARD // MD08-26-H2-7-12-9 [SS8641// McCormick*2/ Ning7840] / USG 3118"S" (VA11W-278)	Griffey	2019-20
45	16VDH-SRW01-120	L11541 (MDC07026-F2-19-13-4 = SS8641//McCormick*2/ Ning7840) / Jamestown (VA02W-370)	Griffey	2019-20
46	16VDH-SRW09-025	Pioneer 26R10 / VA10W-96 ("16162660") // GA03564-12E6	Griffey	2019-20
47	16VDH-SRW06-131	Pioneer 26R41 / USG 3118"S" (VA12W-54) // Hilliard (VA11W-108)	Griffey	2019-20
48	VA18FHB-58	Shirley // KY03C-1237-32 [PION 25R18/92C-0017-17//KY96C-0767-1] / IL02-18228 [PION 25R26/IL9634-2443//IL95-4162], F8	Griffey	2019-20

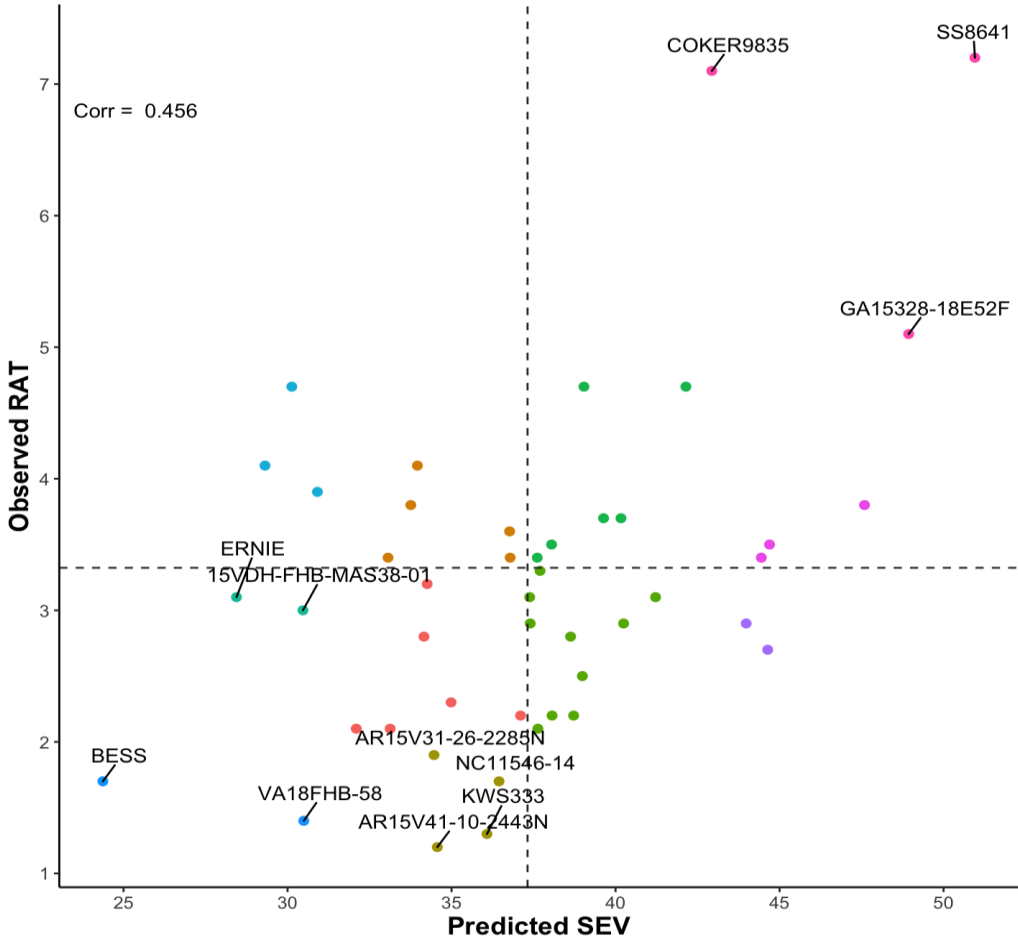
**Fusarium Head Blight Rating
(0 - 9)**

ENTRY NO	CULTIVAR/ DESIGNATION	N'PORT AR	FLOR'CE SC	KINSTON NC	W'BORO LA	ALEX LA	KWS IL	MEAN ALL LOC.	GEBV	
									SEVERITY	Rank
1	ERNIE	0	1	4	7	5	2	3	14	28
2	COKER9835	8	6	6	7	8	9	7	46	43
3	BESS	1	0	3	3	1	3	2	4	24
4	JAMESTOWN	1	2	4	8	4	3	3	14	33
5	SS 8641	7	7	8	8	4	9	7	46	51
6	Pioneer 26R46	7	6	8	7	8	8	7	46	
7	NC11546-14	2	2	2	5	0	1	2	4	36
8	NC12642-81	2	1	3	5	2	2	2	4	35
9	NC15-21834	2	0	3	4	0	4	2	4	39
10	NC15-21835	3	0	3	4	1	3	2	4	38
11	NC16-19449	3	2	7	4	1	7	4	32	40
12	NC11363-25	3	1	4	6	1	4	3	14	44
13	NC12164-94	2	1	4	5	1	8	3	14	38
14	NC12193-49	3	1	2	4	1	3	2	4	32
15	AR12002-0024N	2	3	3	6	6	4	4	32	34
16	AR12486-2417N	1	3	5	4	2	4	3	14	37
17	AR12486-2419N	2	3	4	7	1	4	3	14	38
18	AR12486-2420N	2	3	5	4	1	4	3	14	39
19	AR15V21-09-2089N	1	3	4	3	0	2	2	4	38
20	AR15V31-26-2285N	1	1	3	5	1	1	2	4	34
21	AR15V41-10-2443N	1	2	3	2	1	1	1	1	35
22	ARNCDH12753-103-1536M	4	0	4	3	1	5	3	14	45
23	GAFHBMAS14031-201	2	2	4	6	6	2	3	14	37
24	GA151313-LDH127-19E36	4	5	6	6	4	5	5	41	42
25	GA151313-LDH224-19E38	2	3	4	8	7	5	5	41	39
26	GA10457-19LE13	4	1	4	4	1	6	3	14	34
27	GANC12642-12-19LE16	4	2	3	5	1	2	3	14	34
28	GA15328-18E52F	4	3	6	7	6	6	5	41	49
29	KWS216	5	3	5	4	0	7	4	32	48
30	KWS238	6	1	4	3	0	4	3	14	37
31	KWS246	4	1	4	3	1	6	3	14	40
32	KWS263	3	3	5	5	1	5	3	14	45
33	KWS333	3	1	2	2	0	1	1	1	36
34	LA13045D-173	3	1	4	7	2	1	3	14	41
35	LA13045D-160	2	5	6	7	2	7	5	41	
36	LA13181D-151A	3	4	5	6	1	6	4	32	34
37	LA15166LDH296	3	1	5	5	0	8	3	14	44
38	LA15203LDH075	4	2	5	4	1	6	4	32	40
39	LA15VDH-FHB-MAS10-16	2	1	2	5	2	2	2	4	33
40	LANC9337-63-4	4	3	5	8	3	3	4	32	29
41	15VDH-FHB-MAS22-14	1	1	2	8	2	0	2	4	37
42	15VDH-FHB-MAS38-01	3	2	3	8	2	0	3	14	30
43	15VDH-FHB-MAS17-23	3	4	5	8	7	3	5	41	30
44	15VDH-FHB-MAS34-18	2	0	4	7	0	3	3	14	39
45	16VDH-SRW01-120	2	3	4	8	5	2	4	32	31
46	16VDH-SRW09-025	4	3	4	5	1	5	4	32	38
47	16VDH-SRW06-131	5	1	5	8	1	4	4	32	37
48	VA18FHB-58	2	1	2	4	0	0	1	1	30

Mean	3	2	4	5	2	4	3
LSD (0.05)	2	3	1	2	2	.	3
CV%	30.8	84.9	14.5	21.3	47.3	.	44.2
Correl. with SEV Prediction	0.50	0.33	0.56	-0.01	0.00	0.62	0.46

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Mean Rating over Locations vs Predicted Severity 10-12-20



FHB Incidence (1-100)

ENTRY NO	CULTIVAR/ DESIGNATION	URBANA	WARSAW	MEAN	RANK
		IL	VA	ALL LOC.	
1	ERNIE	75	25	50	16
2	COKER9835	93	80	87	46
3	BESS	53	50	52	20
4	JAMESTOWN	83	25	54	24
5	SS 8641	95	80	88	47
6	Pioneer 26R46	.	90	105	48
7	NC11546-14	56	50	53	21
8	NC12642-81	75	40	58	28
9	NC15-21834	77	35	56	26
10	NC15-21835	82	25	53	21
11	NC16-19449	.	30	45	11
12	NC11363-25	.	35	50	16
13	NC12164-94	66	50	58	28
14	NC12193-49	37	25	31	4
15	AR12002-0024N	86	40	63	32
16	AR12486-2417N	72	65	68	36
17	AR12486-2419N	74	55	64	33
18	AR12486-2420N	80	55	68	36
19	AR15V21-09-2089N	65	20	43	10
20	AR15V31-26-2285N	65	35	50	16
21	AR15V41-10-2443N	53	40	47	14
22	ARNCDH12753-103-1536M	.	70	85	45
23	GAFHBMAS14031-201	76	25	51	19
24	GA151313-LDH127-19E36	92	55	73	38
25	GA151313-LDH224-19E38	.	40	55	25
26	GA10457-19LE13	.	60	75	39
27	GANC12642-12-19LE16	.	20	35	5
28	GA15328-18E52F	83	70	77	40
29	KWS216	91	70	80	43
30	KWS238	89	65	77	40
31	KWS246	83	35	59	31
32	KWS263	89	65	77	40
33	KWS333	73	20	47	14
34	LA13045D-173	52	20	36	8
35	LA13045D-160	69	45	57	27
36	LA13181D-151A	76	55	66	35
37	LA15166LDH296	87	75	81	44
38	LA15203LDH075	87	30	58	28
39	LA15VDH-FHB-MAS10-16	.	20	35	5
40	LANC9337-63-4	.	15	30	1
41	15VDH-FHB-MAS22-14	.	15	30	1
42	15VDH-FHB-MAS38-01	45	15	30	1
43	15VDH-FHB-MAS17-23	44	40	42	9
44	15VDH-FHB-MAS34-18	.	30	45	11
45	16VDH-SRW01-120	.	30	45	11
46	16VDH-SRW09-025	.	50	65	34
47	16VDH-SRW06-131	86.7	20	53	21
48	VA18FHB-58	.	20	35	5
Mean		7	42	55	
LSD (0.05)		19	43	26	
CV%		13.1	51.2	23.2	

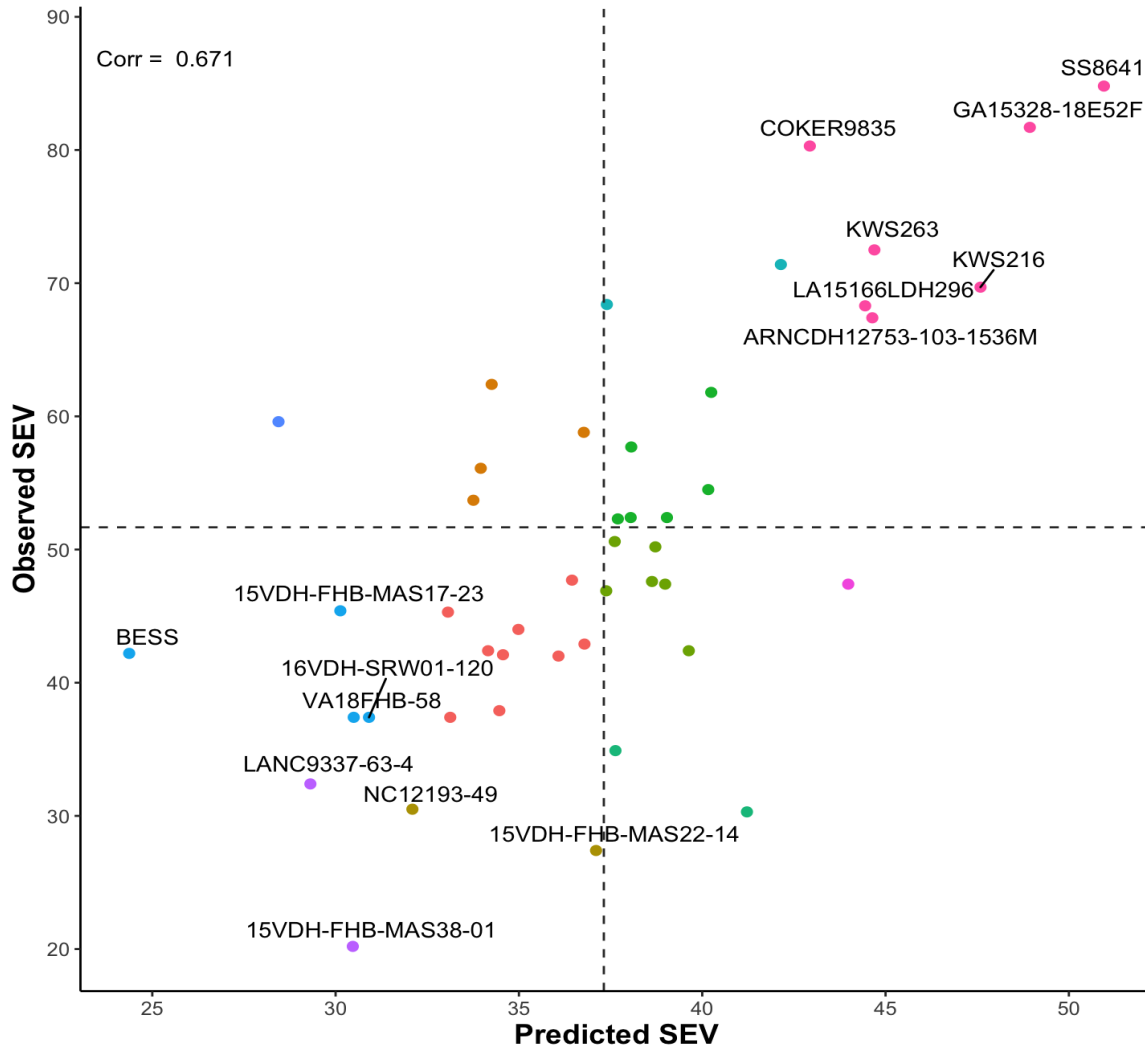
FHB Severity (1-100)

CULTIVAR/ DESIGNATION	URBANA IL	WARSAW VA	MEAN ALL LOC.	Rank	
					GEBV
1 ERNIE	84	35	60	36	28
2 COKER9835	91	70	80	45	43
3 BESS	39	45	42	11	24
4 JAMESTOWN	71	20	45	18	33
5 SS 8641	100	70	85	47	51
6 Pioneer 26R46	.	75	87	48	
7 NC11546-14	60	35	48	23	36
8 NC12642-81	53	35	44	17	35
9 NC15-21834	70	30	50	25	39
10 NC15-21835	85	30	58	34	38
11 NC16-19449	.	30	42	11	40
12 NC11363-25	.	35	47	20	44
13 NC12164-94	60	45	52	27	38
14 NC12193-49	36	25	31	4	32
15 AR12002-0024N	72	35	54	30	34
16 AR12486-2417N	49	45	47	20	37
17 AR12486-2419N	56	45	51	26	38
18 AR12486-2420N	50	45	48	23	39
19 AR15V21-09-2089N	45	25	35	6	38
20 AR15V31-26-2285N	51	25	38	10	34
21 AR15V41-10-2443N	44	40	42	11	35
22 ARNCDH12753-103-1536M	.	55	67	39	45
23 GAFHBMAS14031-201	51	35	43	16	37
24 GA151313-LDH127-19E36	88	55	71	43	42
25 GA151313-LDH224-19E38	.	40	52	27	39
26 GA10457-19LE13	.	50	62	37	34
27 GANC12642-12-19LE16	.	30	42	11	34
28 GA15328-18E52F	93	70	82	46	49
29 KWS216	84	55	70	42	48
30 KWS238	77	60	68	40	37
31 KWS246	84	40	62	37	40
32 KWS263	85	60	72	44	45
33 KWS333	59	25	42	11	36
34 LA13045D-173	31	30	30	3	41
35 LA13045D-160	58	50	54	30	
36 LA13181D-151A	62	50	56	33	34
37 LA15166LDH296	82	55	68	40	44
38 LA15203LDH075	79	30	55	32	40
39 LA15VDH-FHB-MAS10-16	.	25	37	7	33
40 LANC9337-63-4	.	20	32	5	29
41 15VDH-FHB-MAS22-14	.	15	27	2	37
42 15VDH-FHB-MAS38-01	25	15	20	1	30
43 15VDH-FHB-MAS17-23	61	30	45	18	30
44 15VDH-FHB-MAS34-18	.	35	47	20	39
45 16VDH-SRW01-120	.	25	37	7	31
46 16VDH-SRW09-025	.	40	52	27	38
47 16VDH-SRW06-131	93	25	59	35	37
48 VA18FHB-58	.	25	37	7	30

Mean	64	39	50
LSD (0.05)	27	32	25
CV%	20.5	41.1	24.2
Correlations with Predictions	0.59	0.63	0.67

USSN 2020

Mean Severity over Locations vs Predicted Severity 10-12-20



FHB Index (1-100)

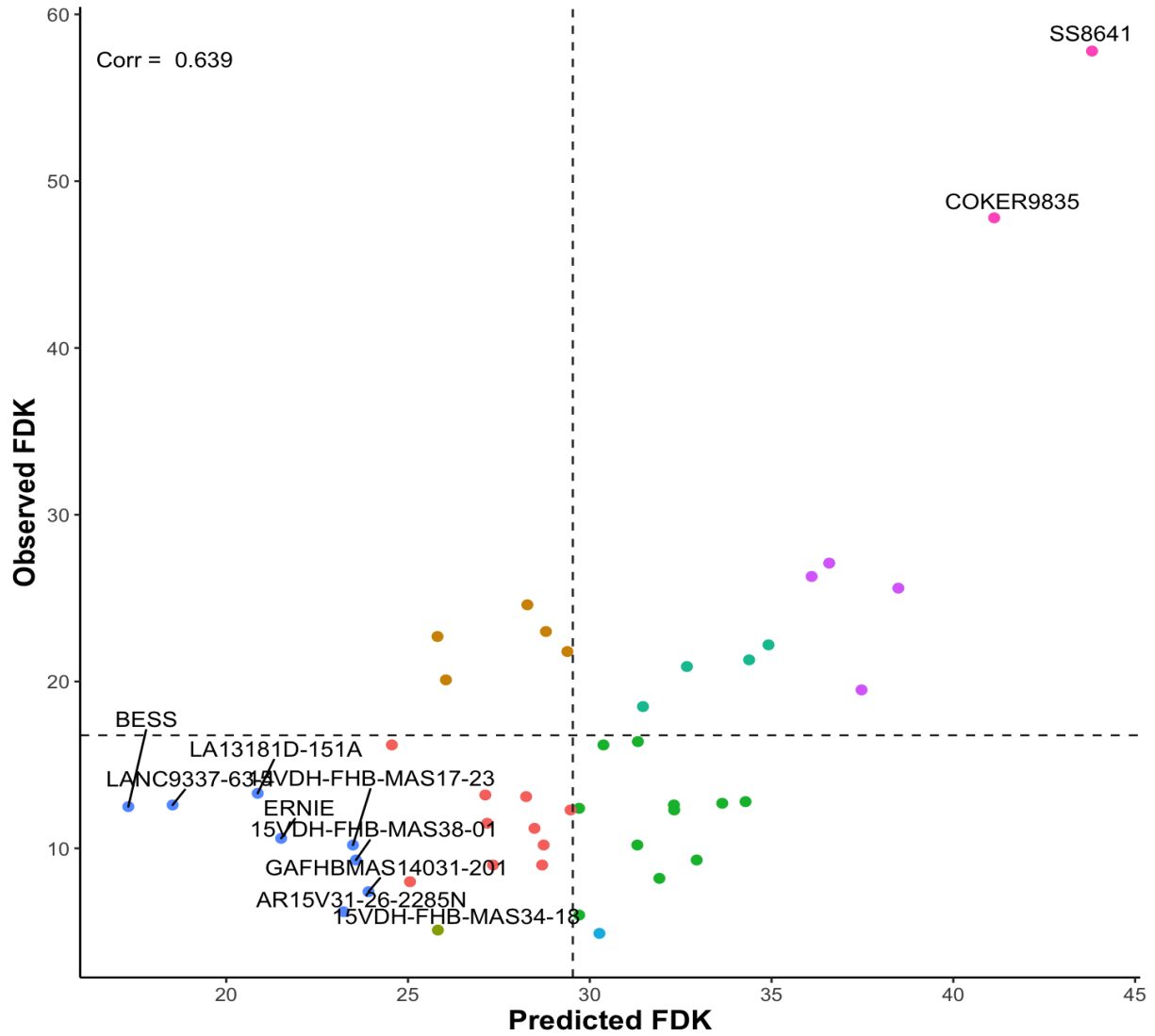
CULTIVAR/ DESIGNATION	URBANA	WARSAW	MEAN	RANK
	IL	VA	ALL LOC.	
1 ERNIE	63	9	36	31
2 COKER9835	84	56	70	46
3 BESS	21	23	22	12
4 JAMESTOWN	59	5	32	24
5 SS 8641	95	56	75	47
6 Pioneer 26R46	.	68	82	48
7 NC11546-14	34	18	26	18
8 NC12642-81	40	15	27	20
9 NC15-21834	54	11	32	26
10 NC15-21835	70	8	39	34
11 NC16-19449	.	10	25	17
12 NC11363-25	.	13	27	21
13 NC12164-94	39	23	31	22
14 NC12193-49	13	7	10	2
15 AR12002-0024N	62	14	38	32
16 AR12486-2417N	35	30	32	25
17 AR12486-2419N	41	25	33	28
18 AR12486-2420N	40	25	33	27
19 AR15V21-09-2089N	29	6	17	5
20 AR15V31-26-2285N	33	9	21	11
21 AR15V41-10-2443N	24	22	23	13
22 ARNCDH12753-103-1536M	.	38	53	39
23 GAFHBMAS14031-201	39	9	24	15
24 GA151313-LDH127-19E36	80	31	55	41
25 GA151313-LDH224-19E38	.	16	31	23
26 GA10457-19LE13	.	29	44	38
27 GANC12642-12-19LE16	.	6	21	10
28 GA15328-18E52F	78	49	63	45
29 KWS216	76	39	57	44
30 KWS238	68	39	54	40
31 KWS246	69	15	42	36
32 KWS263	76	39	57	43
33 KWS333	43	5	24	16
34 LA13045D-173	16	7	11	3
35 LA13045D-160	40	26	33	29
36 LA13181D-151A	47	29	38	33
37 LA15166LDH296	71	41	56	42
38 LA15203LDH075	69	9	39	35
39 LA15VDH-FHB-MAS10-16	.	5	20	7
40 LANC9337-63-4	.	3	17	6
41 15VDH-FHB-MAS22-14	.	2	17	4
42 15VDH-FHB-MAS38-01	11	3	7	1
43 15VDH-FHB-MAS17-23	27	15	21	9
44 15VDH-FHB-MAS34-18	.	11	26	19
45 16VDH-SRW01-120	.	8	23	14
46 16VDH-SRW09-025	.	20	35	30
47 16VDH-SRW06-131	80	5	42	37
48 VA18FHB-58	.	6	20	8
Mean	51	20	33	
LSD (0.05)	.	33	28	
CV%	.	83.5	41.9	

Percent Fusarium Damaged Kernels

CULTIVAR/ DESIGNATION	FLOR'CE	FLOR'CE	FLOR'CE	KINSTON	W.BORO	ALEX.	KWS	N'PORT	UIL	WARSAW	MEAN	GEBV	
	SC	SC	SC	NC	LA	LA	IL	AR	IL	VA	ALL LOC.	Rank	
	Manual	Visual	Vibe										
1 ERNIE	2	5	8	23	10	5	4	6	25	8	11	15	22
2 COKER9835	9	20	9	70	11	40	50	63	93	43	48	47	41
3 BESS	7	9	14	35	8	1	10	9	17	10	12	17	17
4 JAMESTOWN	1	6	6	35	25	1	10	5	37	13	16	29	25
5 SS 8641	10	21	16	80	35	28	83	82	95	45	58	48	44
6 Pioneer 26R46	10	20	18	63	13	18	40	62	92	73	47	46	.
7 NC11546-14	4	6	6	5	10	3	13	20	35	12	13	22	34
8 NC12642-81	4	8	4	8	6	1	8	12	23	20	10	12	29
9 NC15-21834	7	15	6	13	5	5	13	10	28	23	13	22	28
10 NC15-21835	2	18	11	13	6	5	8	15	28	22	13	22	27
11 NC16-19449	4	10	15	43	3	3	18	22	58	19	22	37	29
12 NC11363-25	4	9	6	23	1	1	8	18	28	17	13	22	34
13 NC12164-94	3	9	7	15	1	3	13	15	28	18	12	17	29
14 NC12193-49	3	4	4	0	1	3	2	8	23	7	6	3	30
15 AR12002-0024N	6	9	8	13	3	13	13	8	25	12	12	17	27
16 AR12486-2417N	1	5	4	20	1	3	20	10	23	19	12	17	30
17 AR12486-2419N	1	5	3	18	18	1	15	12	50	16	16	29	31
18 AR12486-2420N	2	5	6	15	23	1	20	12	43	12	16	29	30
19 AR15V21-09-2089N	1	8	4	18	3	3	5	10	15	8	8	6	32
20 AR15V31-26-2285N	2	5	3	8	13	1	1	6	13	5	6	3	23
21 AR15V41-10-2443N	2	10	4	8	20	1	5	4	17	15	9	8	33
22 ARNCDH12753-103-1536M	5	24	7	25	15	13	33	40	55	25	27	45	37
23 GAFHBMAS14031-201	4	3	10	8	8	3	4	10	15	8	7	5	24
24 GA151313-LDH127-19E36	7	8	25	50	3	8	23	15	58	28	25	42	28
25 GA151313-LDH224-19E38	1	5	7	35	43	8	10	8	28	13	18	32	31
26 GA10457-19LE13	6	8	11	25	5	1	8	20	25	7	12	17	32
27 GANC12642-12-19LE16	9	23	7	15	3	5	9	23	13	9	11	15	28
28 GA15328-18E52F	7	9	7	40	5	10	18	37	17	23	19	33	37
29 KWS216	8	14	12	20	10	5	30	45	48	35	26	43	38
30 KWS238	7	25	6	13	1	5	25	37	40	28	20	34	26
31 KWS246	9	19	15	25	8	5	15	38	33	33	21	35	34
32 KWS263	2	16	8	38	8	3	18	38	45	20	22	37	35
33 KWS333	6	20	6	23	8	1	5	14	23	17	13	22	32
34 LA13045D-173	1	5	4	20	3	10	3	6	27	10	10	12	31
35 LA13045D-160	3	5	12	55	3	1	20	27	50	33	24	41	.
36 LA13181D-151A	2	13	5	15	3	3	18	8	38	15	13	22	21
37 LA15166LDH296	6	18	4	35	65	6	25	10	30	30	26	43	36
38 LA15203LDH075	10	24	9	23	3	8	18	35	45	23	21	35	33
39 LA15VDH-FHB-MAS10-16	2	9	12	13	3	1	5	9	13	13	8	6	25
40 LANC9337-63-4	3	6	9	13	5	5	10	12	40	10	13	22	19
41 15VDH-FHB-MAS22-14	1	4	4	8	1	3	4	8	10	3	5	1	30
42 15VDH-FHB-MAS38-01	3	5	8	15	1	10	6	16	15	7	9	8	24
43 15VDH-FHB-MAS17-23	4	9	11	10	5	5	5	25	13	10	10	12	23
44 15VDH-FHB-MAS34-18	2	4	3	5	3	1	2	6	12	9	5	1	26
45 16VDH-SRW01-120	1	5	3	15	10	5	4	12	15	9	9	8	29
46 16VDH-SRW09-025	10	16	11	30	33	5	18	27	30	28	23	39	26
47 16VDH-SRW06-131	3	14	12	15	55	1	10	32	52	10	23	39	29
48 VA18FHB-58	4	9	15	5	8	1	6	28	9	7	9	8	27
Mean	4	11	8	23	11	6	15	21	32	18	17		
LSD (0.05)	4	1	2	17	13	9	.	33	17	26	20		
CV%	65.6	59.9	54.1	35.2	72.2	96.0	.	19.6	32.5	71.7	59.8		
Correlations with Predictions	0.34	0.41	0.00	0.50	0.25	0.50	0.61	0.64	0.52	0.63	0.64		

USSN 2020

Mean FDK over Locations vs Predicted FDK 10-12-20



Incidence, Severity, Kernel Rating (ISK) Index
(0.3 * Incidence + 0.3 * Severity + 0.4 * Fusarium Damaged Kernels)

CULTIVAR/ DESIGNATION	URBANA	WARSAW	MEAN	Rank
	IL	VA	ALL LOC.	
1 ERNIE	58	18	38	23
2 COKER9835	92	45	69	47
3 BESS	34	29	31	14
4 JAMESTOWN	61	14	37	21
5 SS 8641	96	45	71	48
6 Pioneer 26R46	.	50	65	46
7 NC11546-14	49	26	37	21
8 NC12642-81	48	23	35	18
9 NC15-21834	55	20	38	23
10 NC15-21835	61	17	39	25
11 NC16-19449	.	18	33	17
12 NC11363-25	.	21	36	20
13 NC12164-94	49	29	39	25
14 NC12193-49	31	15	23	2
15 AR12002-0024N	57	23	40	29
16 AR12486-2417N	45	33	39	25
17 AR12486-2419N	59	30	44	35
18 AR12486-2420N	56	30	43	31
19 AR15V21-09-2089N	39	14	26	5
20 AR15V31-26-2285N	40	18	29	7
21 AR15V41-10-2443N	36	24	30	11
22 ARNCDH12753-103-1536M	.	38	53	42
23 GAFHBMAS14031-201	44	18	31	13
24 GA151313-LDH127-19E36	77	33	55	44
25 GA151313-LDH224-19E38	.	24	39	25
26 GA10457-19LE13	.	33	48	38
27 GANC12642-12-19LE16	.	15	30	11
28 GA15328-18E52F	60	42	51	39
29 KWS216	72	38	55	44
30 KWS238	66	38	52	41
31 KWS246	63	23	43	31
32 KWS263	70	38	54	43
33 KWS333	49	14	31	14
34 LA13045D-173	35	15	25	4
35 LA13045D-160	58	29	43	31
36 LA13181D-151A	57	32	44	35
37 LA15166LDH296	62	39	51	39
38 LA15203LDH075	68	18	43	31
39 LA15VDH-FHB-MAS10-16	.	14	29	7
40 LANC9337-63-4	.	11	26	5
41 15VDH-FHB-MAS22-14	.	9	24	3
42 15VDH-FHB-MAS38-01	27	9	18	1
43 15VDH-FHB-MAS17-23	37	21	29	7
44 15VDH-FHB-MAS34-18	.	20	35	18
45 16VDH-SRW01-120	.	17	32	16
46 16VDH-SRW09-025	.	27	42	30
47 16VDH-SRW06-131	74	14	44	35
48 VA18FHB-58	.	14	29	7
Mean		25	37	
LSD (0.05)		45	19	
CV%		21.8	24.4	

DON (ppm)

CULTIVAR/ DESIGNATION	N'PORT	ALEX	W'BORO	KWS	MEAN	RANK	
	AR	LA	LA	IL	ALL LOC.	GEBV	
1 ERNIE	5	4	8	1	5	21	10
2 COKER9835	15	9	10	6	10	45	15
3 BESS	6	2	3	1	3	2	9
4 JAMESTOWN	4	2	6	2	3	2	7
5 SS 8641	25	9	31	14	20	48	15
6 Pioneer 26R46	28	8	26	10	18	47	.
7 NC11546-14	9	4	5	1	5	21	8
8 NC12642-81	6	2	4	1	3	2	8
9 NC15-21834	9	7	6	3	6	32	10
10 NC15-21835	9	7	6	1	6	32	10
11 NC16-19449	9	3	5	4	5	21	10
12 NC11363-25	7	3	7	1	5	21	11
13 NC12164-94	6	3	5	2	4	12	8
14 NC12193-49	3	4	3	1	3	2	5
15 AR12002-0024N	6	6	9	2	6	32	5
16 AR12486-2417N	9	3	7	2	5	21	12
17 AR12486-2419N	9	3	6	2	5	21	12
18 AR12486-2420N	10	2	5	2	5	21	12
19 AR15V21-09-2089N	5	3	2	1	3	2	10
20 AR15V31-26-2285N	5	2	5	1	3	2	10
21 AR15V41-10-2443N	3	0	1	1	1	1	9
22 ARNCDH12753-103-1536M	17	9	7	5	9	43	10
23 GAFHBMAS14031-201	4	3	6	1	3	2	10
24 GA151313-LDH127-19E36	11	3	7	3	6	32	15
25 GA151313-LDH224-19E38	6	4	7	3	5	21	11
26 GA10457-19LE13	9	2	5	3	4	12	11
27 GANC12642-12-19LE16	10	4	5	3	5	21	6
28 GA15328-18E52F	16	4	10	3	8	40	15
29 KWS216	17	6	8	5	9	43	14
30 KWS238	15	5	7	4	8	40	11
31 KWS246	15	5	4	3	7	36	15
32 KWS263	18	3	13	4	10	45	10
33 KWS333	5	3	4	1	3	2	16
34 LA13045D-173	5	3	7	1	4	12	10
35 LA13045D-160	6	1	6	3	4	12	.
36 LA13181D-151A	5	2	6	3	4	12	6
37 LA15166LDH296	8	4	8	6	7	36	12
38 LA15203LDH075	15	6	4	3	7	36	13
39 LA15VDH-FHB-MAS10-16	4	1	5	1	3	2	9
40 LANC9337-63-4	4	3	6	2	4	12	5
41 15VDH-FHB-MAS22-14	4	2	8	1	4	12	9
42 15VDH-FHB-MAS38-01	5	4	4	1	3	2	7
43 15VDH-FHB-MAS17-23	7	3	8	1	5	21	7
44 15VDH-FHB-MAS34-18	6	3	6	1	4	12	5
45 16VDH-SRW01-120	9	4	8	1	5	21	6
46 16VDH-SRW09-025	13	4	8	4	7	36	10
47 16VDH-SRW06-131	14	2	11	3	8	40	13
48 VA18FHB-58	10	1	5	1	4	12	13
Mean	9	4	7	3	6		
LSD (0.05)	.	3	6	.	5		
CV%	.	44.3	47.0	.	51.8		
Correlations with Predictions	0.59	0.25	0.30	0.44	0.48		

Genotypic Analyses of Regions Associated with FHB Resistance and Other Pertinent Loci

DESIGNATION	Rht-B1	Rht-D1	Fhb1	Fhb Massey 3BL	Fhb_1B_Jamesto wn	Fhb_1A_Neuse	Fhb_4A_Neuse	Fhb_6A_Neuse	Fhb_2B_Bess	Fhb_3B_Bess	Yr17/Lr37/Sr38	Lr9	Lr18	H13	Pm1a	Pm54
1 ERNIE	Rht1	no	no	yes	no	het	no	yes	no	no	no	yes	no	no	no	het
2 COKER9835	no	Rht2	no	no	no	no	yes	no	no	no	no	no	no	no	no	no
3 BESS	Rht1	no	no	no	yes	yes	no	no	yes	yes	no	no	yes	no	no	no
4 JAMESTOWN	no	Rht2	no	no	yes	yes	no	no	no	no	yes	no	yes	no	yes	no
5 SS 8641	no	Rht2	no	no	no	no	no	no	no	no	no	no	het	no	no	no
6 Pioneer 26R46	no	Rht2	no	no	no	het	no	no	no	no	het	no	no	no	yes	no
7 NC11546-14	Rht1	no	Fhb1	no	yes	yes	no	no	no	no	het	no	no	yes	no	no
8 NC12642-81	het	het	het	het	het	yes	no	no	no	no	no	no	ND	yes	ND	ND
9 NC15-21834	fail	fail	no	fail	fail	yes?	fail	fail	no	fail	no	no	yes	fail	no	no
10 NC15-21835	no	Rht2	no	no	no	yes	no	no	no	no	no	no	yes	no	no	no
11 NC16-19449	no	Rht2	no	no	yes	yes	no	yes	no	no	no	no	yes	no	no	no
12 NC11363-25	no	Rht2	no	no	het	yes	no	yes	no	no	no	no	yes	no	no	no
13 NC12164-94	no	Rht2	Fhb1	no	yes	no	no	het	no	no	het	no	het	no	yes	no
14 NC12193-49	het	het	het	no	het	no	no	het	no	no	yes	no	yes	het	no	no
15 AR12002-0024N	no	no	no	no	yes	no	yes	het	no	no	yes	yes	yes	no	no	no
16 AR12486-2417N	no	Rht2	no	no	no	no	yes	no	no	no	yes	yes	yes	no	no	het
17 AR12486-2419N	no	Rht2	no	no	no	no	yes	yes	no	no	yes	no	het	no	no	no
18 AR12486-2420N	no	het	no	no	het	het	yes	no	no	no	yes	no	yes	no	no	no
19 AR15V21-09-2089N	no	Rht2	Fhb1	no	no	no	yes	no	no	no	yes	no	yes	no	no	no
20 AR15V31-26-2285N	no	Rht2	Fhb1	no	no	no	yes	no	no	no	yes	no	yes	no	no	no
21 AR15V41-10-2443N	no	Rht2	Fhb1	no	no	no	yes	no	no	no	het	no	yes	no	no	no
22 ARNCDH12753-103-1536M	no	Rht2	no	no	yes	het	no	fail	no	no	het	no	yes	no	no	no
23 GAFHBMAS14031-201	no	het	het	no	no	het	no	no	no	no	yes	no	yes	no	no	no
24 GA151313-LDH127-19E36	no	Rht2	no	no	yes	no	yes	no	no	no	yes	no	yes	yes	no	no
25 GA151313-LDH224-19E38	no	Rht2	no	no	yes	no	no	no	no	no	yes	no	no	yes	no	no
26 GA10457-19LE13	no	Rht2	no	no	no	no	yes	yes	no	yes	yes	no	het	yes	yes	no
27 GANC12642-12-19LE16	Rht1	no	Fhb1	no	yes	yes	no	no	no	no	het	no	no	no	no	no
28 GA15328-18E52F	no	Rht2	het	no	no	no	no	no	no	no	no	no	yes	het	no	no
29 KWS216	no	Rht2	no	no	no	no	no	no	no	no	no	no	het	yes	no	no
30 KWS238	no	Rht2	no	no	no	no	no	fail	no	no	no	no	no	no	no	het
31 KWS246	no	Rht2	no	no	no	no	no	no	no	no	no	yes	yes	no	no	no
32 KWS263	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	no	no	no
33 KWS333	Rht1	no	no	no	no	no	yes	fail	no	no	yes	no	yes	no	yes	no
34 LA13045D-173	no	Rht2	Fhb1	no	no	no	no	fail	no	no	yes	no	yes	no	yes	no
35 LA13045D-160	no	Rht2	Fhb1	no	no	no	no	no	no	no	yes	no	yes	no	no	no
36 LA13181D-151A	no	Rht2	Fhb1	no	no	no	no	het	no	no	no	no	yes	no	no	yes
37 LA15166LDH296	no	Rht2	no	no	yes	yes	no	no	no	no	no	yes	yes	yes	no	no
38 LA15203LDH075	no	Rht2	no	no	yes	yes	no	no	no	no	yes	yes	yes	no	no	no
39 LA15VDH-FHB-MAS10-16	no	Rht2	Fhb1	no	yes	no	no	no	no	no	no	no	yes	no	no	no
40 LANC9337-63-4	no	Rht2	no	no	yes	yes	no	no	no	no	yes	no	yes	no	no	no
41 15VDH-FHB-MAS22-14	no	Rht2	Fhb1	yes	no	no	no	het	no	no	no	no	no	no	yes	no
42 15VDH-FHB-MAS38-01	no	Rht2	Fhb1	no	yes	no	no	no	no	no	yes	no	yes	yes	het?	no
43 15VDH-FHB-MAS17-23	no	Rht2	Fhb1	no	no	no	no	no	no	no	yes	no	yes	no	yes	no
44 15VDH-FHB-MAS34-18	no	Rht2	Fhb1	no	no	no	no	het	no	no	yes	no	yes	yes	yes	no
45 16VDH-SRW01-120	no	Rht2	Fhb1	no	no	no	no	het	no	no	no	no	yes	no	no	no
46 16VDH-SRW09-025	no	Rht2	no	no	yes	no	no	no	no	no	no	no	no	no	no	no
47 16VDH-SRW06-131	no	Rht2	no	no	yes	no	no	no	no	no	no	no	no	no	no	no
48 VA18FHB-58	Rht1	no	Fhb1	no	no	no	no	no	no	no	no	no	no	no	no	no

Efficacy of Selected FHB Resistance QTL

Mean Incidence (INC), Severity (SEV), Fusarium Damaged Kernels (FDK), and DON for entries in the 2013-2020 Uniform Southern Winter Wheat Scab Nurseries with and without resistance alleles at quantitative trait loci (QTL) associated with resistance to (FHB). FHB Rating (RAT) data included for the 2018-20 nurseries only

QTL†	Allele‡	n§	INC	SEV	FDK	DON	RAT
<i>Qfhb.nc-2B.1 (Bess)</i>	S	319	57.5 p = 0.4446	33.4 p = 0.1271	29.9 p = 0.2626	8.7 p = 0.0046	4.0 p = 0.0859
	R	36	56.3 -1.2	31.7 -1.7	28.7 -1.2	7.5 -1.2	3.6 -0.4
<i>Qfhb.nc-3B.2 (Bess)</i>	S	344	57.5 p = 0.0453	33.3 p = 0.0007	30.2 p < 0.0001	8.6 p = 0.6065	4.0 p < 0.0001
	R	15	53.9 -3.6	28.4 -4.9	24.0 -6.2	8.4 -0.2	3.1 -0.9
Ning_5A	S	313	57.8 p = 0.0189	33.0 p = 0.0003	31.9 p < 0.0001	9.1 p < 0.0001	4.2 p = 0.0010
	R	11	52.8 -5.0	27.1 -5.9	23.0 -8.9	5.2 -3.9	3.5 -0.8
Ernie_5A	S	302	57.4 p = 0.0010	32.4 p < 0.0001	31.0 p < 0.0001	8.8 p < 0.0001	4.2 p = 0.0012
	R	20	61.9 4.5	37.1 4.7	38.9 7.9	10.7 1.9	3.6 -0.7
Wuhan-1_2DL	S	312	57.8 p = 0.3668	33.0 p = 0.0014	31.8 p < 0.0001	9.0 p < 0.0001	4.2 p = 0.0189
	R	11	55.9 -1.9	27.9 -5.1	23.4 -8.5	4.9 -4.1	3.8 -0.5
Sumai 3_Fhb1	S	300	58.5 p = 0.0002	34.6 p < 0.0001	31.1 p < 0.0001	9.1 p < 0.0001	4.1 p < 0.0001
	R	53	52.9 -5.6	27.5 -7.1	23.9 -7.3	6.0 -3.1	3.3 -0.8
<i>QTL_3BL (Massey)</i>	S	333	57.8 p = 0.0496	33.5 p = 0.0951	29.9 p = 0.7711	8.6 p = 0.1234	4.0 p = 0.1037
	R	23	54.9 -2.9	31.6 -2.0	30.2 0.3	8.0 -0.6	3.7 -0.3
<i>QTL_1A (Neuse)</i>	S	176	57.9 p = 0.2251	34.4 p = 0.0031	30.6 p = 0.0008	9.0 p < 0.0001	4.0 p = 0.0030
	R	156	56.7 -1.2000	32.3 -2.1	28.7 -1.9	7.9 -1.1	3.7 -0.3
<i>QTL_4A (Neuse)</i>	S	178	55.0 p = 0.1046	32.6 p = 0.8236	28.2 p = 0.0054	8.5 p = 0.2107	3.9 p = 0.3546
	R	126	57.0 1.9	32.8 0.2	30.3 2.0	8.8 0.4	4.0 0.1
<i>QTL_6A (Neuse)</i>	S	227	57.6 p = 0.7260	33.4 p = 0.9036	30.1 p = 0.8211	9.1 p = 0.0003	4.1 p < 0.0001
	R	106	58.1 0.6	33.5 0.1	30.4 0.3	7.5 -1.6	3.5 -0.6
<i>QTL_1B (Jamestown)</i>	S	153	57.5 p = 0.0485	34.0 p = 0.0003	29.1 p = 0.0065	9.0 p < 0.0001	4.0 p = 0.1379
	R	82	55.5 -2.0	31.0 -3.0	27.4 -1.7	7.4 -1.6	3.9 -0.1

† QTL, quantitative trait loci.

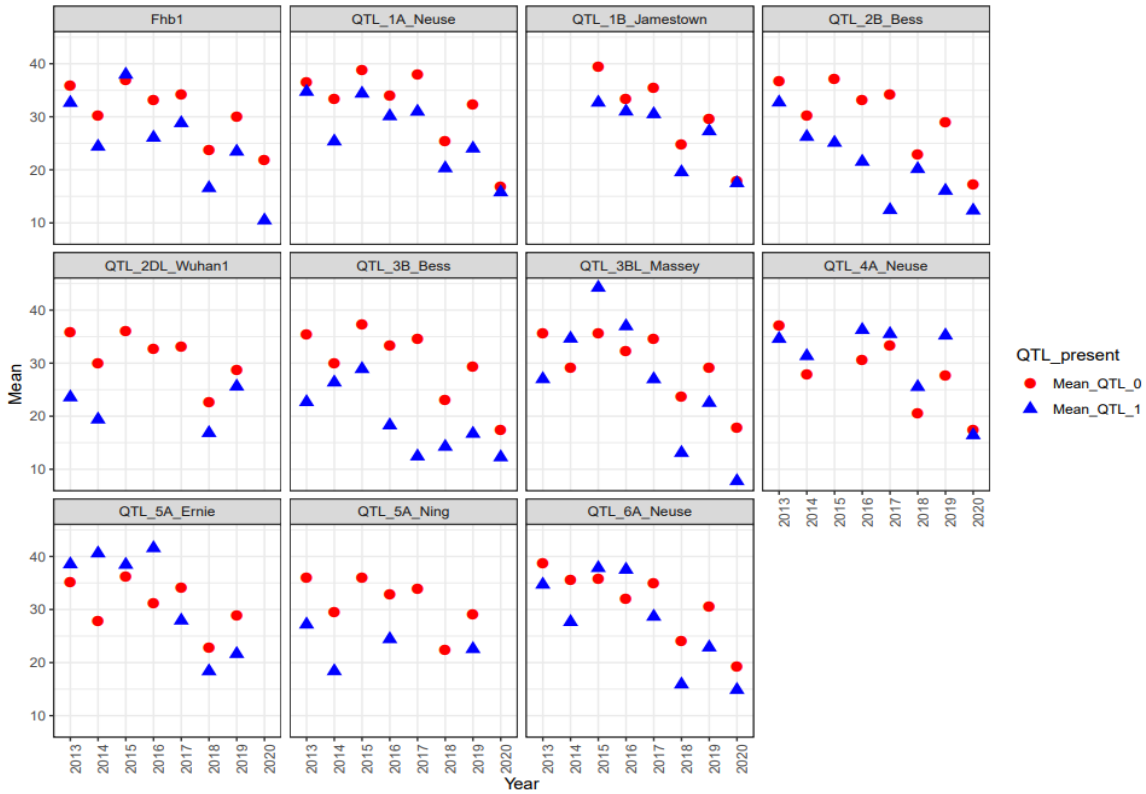
‡ Indicates presence of resistance allele (R) or susceptibility allele (S) at the respective QTL.

§ n indicates the number of lines in the allele group.

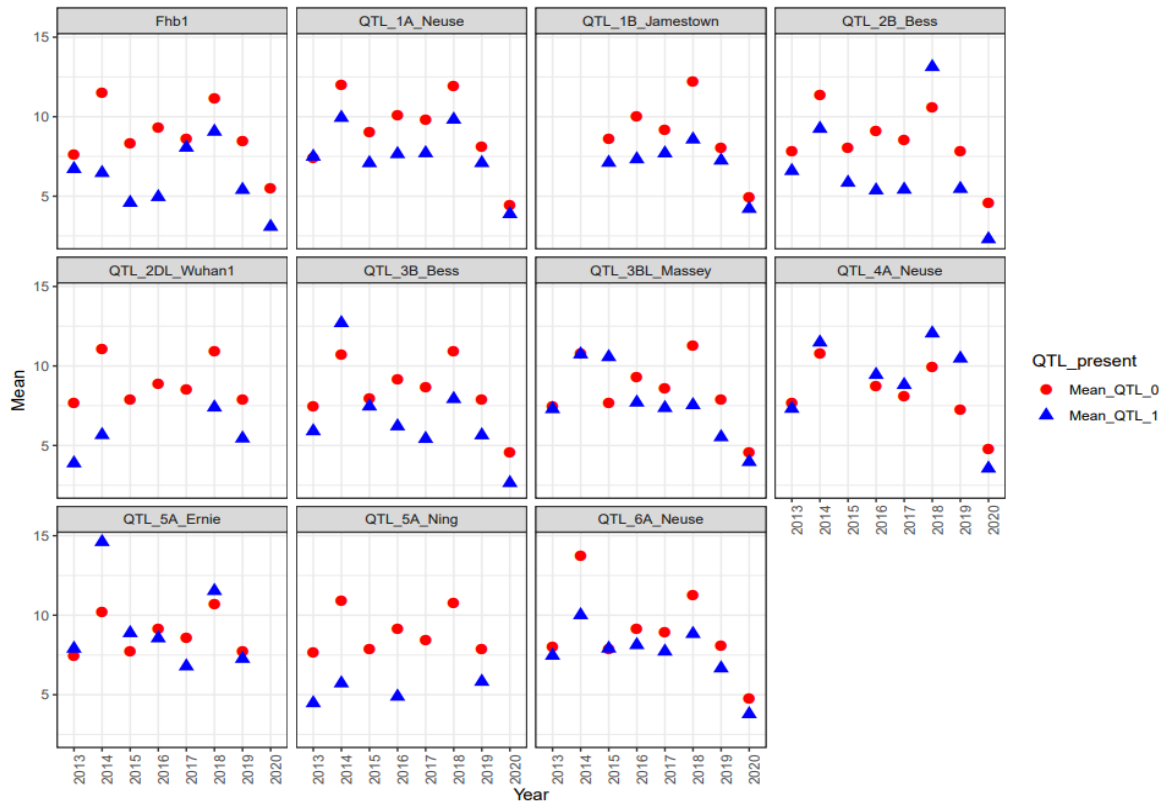
¶ Significance levels of mean comparisons are indicated as: NS (P > 0.05), * (P < 0.05), ** (P < 0.01), *** (P < 0.001).

Efficacy of Selected FHB Resistance QTL For FDK (Top) and DON (Bottom), by year, for 2013 through 2020.

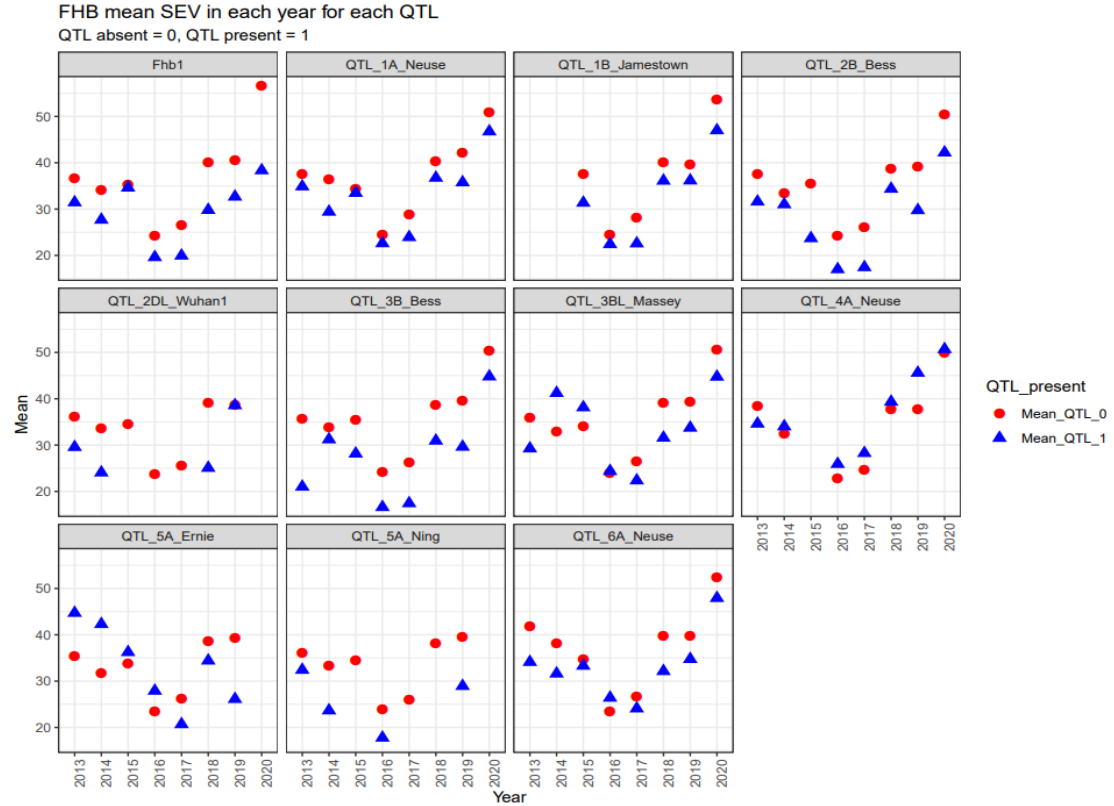
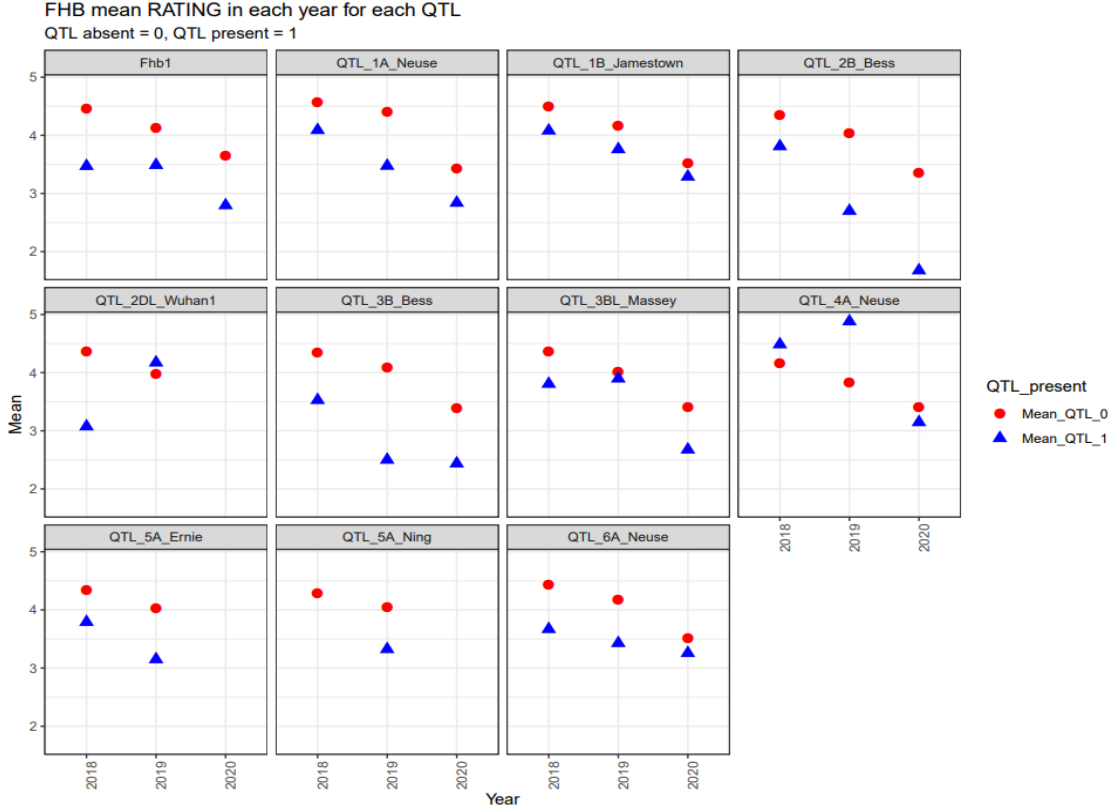
FHB mean FDK in each year for each QTL
 QTL absent = 0, QTL present = 1



FHB mean DON in each year for each QTL
 QTL absent = 0, QTL present = 1



Efficacy of Selected FHB Resistance QTL For FHB Rating (Top) and Severity (Bottom), by year, for 2013 through 2020.



Heading Date (Julian Days*)

CULTIVAR/ DESIGNATION	W'BORO	KINSTON	WARSAW	KWS	FLOR'CE	MEAN	Rank	C1
	LA	NC	VA	IL	SC	ALL LOC.		
1 ERNIE	93	87	118	140	94	106	13	104
2 COKER9835	94	93	122	145	92	109	28	102
3 BESS	98	89	123	141	99	110	32	105
4 JAMESTOWN	87	80	113	138	89	101	2	102
5 SS 8641	90	84	119	143	95	106	13	103
6 Pioneer 26R46	89	84	121	142	89	105	9	
7 NC11546-14	97	89	123	139	102	110	32	101
8 NC12642-81	94	89	120	139	97	108	22	104
9 NC15-21834	94	90	124	143	111	112	43	102
10 NC15-21835	96	92	123	143	111	113	47	101
11 NC16-19449	94	88	117	141	105	109	28	104
12 NC11363-25	93	90	121	142	105	110	32	105
13 NC12164-94	93	89	119	141	99	108	22	105
14 NC12193-49	91	89	117	138	103	107	16	106
15 AR12002-0024N	91	89	123	142	97	108	22	103
16 AR12486-2417N	97	92	125	144	98	111	41	100
17 AR12486-2419N	90	90	124	144	102	110	32	100
18 AR12486-2420N	91	90	125	144	99	110	32	100
19 AR15V21-09-2089N	95	90	123	144	101	110	32	102
20 AR15V31-26-2285N	93	89	119	139	100	108	22	100
21 AR15V41-10-2443N	96	87	117	138	97	107	16	103
22 ARNCDH12753-103-1536M	98	90	124	141	110	112	44	103
23 GAFHBMAS14031-201	90	80	117	140	89	103	5	101
24 GA151313-LDH127-19E36	93	87	123	144	95	108	22	103
25 GA151313-LDH224-19E38	90	84	119	143	92	105	9	101
26 GA10457-19LE13	97	89	123	141	97	109	28	102
27 GANC12642-12-19LE16	93	88	117	140	100	107	16	105
28 GA15328-18E52F	90	88	124	144	96	108	22	101
29 KWS216	96	90	124	144	100	110	32	101
30 KWS238	100	93	119	141	109	112	44	102
31 KWS246	100	93	124	141	105	112	44	105
32 KWS263	94	89	124	141	105	110	32	103
33 KWS333	94	90	123	137	110	111	41	103
34 LA13045D-173	89	86	117	140	93	105	9	101
35 LA13045D-160	89	84	118	139	95	105	9	
36 LA13181D-151A	90	88	119	143	96	107	16	102
37 LA15166LDH296	93	96	124	143	107	113	47	103
38 LA15203LDH075	94	89	117	143	106	110	32	102
39 LA15VDH-FHB-MAS10-16	90	80	116	140	89	103	5	100
40 LANC9337-63-4	84	80	113	138	90	101	2	101
41 15VDH-FHB-MAS22-14	87	83	115	141	96	104	7	104
42 15VDH-FHB-MAS38-01	84	80	113	141	90	101	2	102
43 15VDH-FHB-MAS17-23	89	79	116	139	78	100	1	101
44 15VDH-FHB-MAS34-18	90	88	116	140	103	107	16	101
45 16VDH-SRW01-120	89	88	121	140	96	107	16	102
46 16VDH-SRW09-025	96	88	119	142	100	109	28	104
47 16VDH-SRW06-131	89	88	114	139	100	106	13	102.6
48 VA18FHB-58	87	88	115	139	93	104	7	105.1
Mean	92	87	120	141	98	108		
LSD (0.05)	4.0	4	7	1	11	6		
CV%	2.8	2.6	2.9	0.5	7.0	2.9		

Plant Height (in)

	CULTIVAR/ DESIGNATION	WARSAW	KWS	MEAN	RANK
		VA	IL	ALL LOC.	
1	ERNIE	38	33	36	16
2	COKER9835	37	30	34	6
3	BESS	41	36	39	40
4	JAMESTOWN	36	32	34	7
5	SS 8641	39	34	36	21
6	Pioneer 26R46	41	34	38	32
7	NC11546-14	41	32	37	24
8	NC12642-81	39	33	36	19
9	NC15-21834	43	37	40	46
10	NC15-21835	42	38	40	45
11	NC16-19449	40	35	38	33
12	NC11363-25	40	33	36	22
13	NC12164-94	41	35	38	36
14	NC12193-49	39	31	35	14
15	AR12002-0024N	43	40	41	48
16	AR12486-2417N	40	35	37	30
17	AR12486-2419N	40	34	37	28
18	AR12486-2420N	39	34	36	23
19	AR15V21-09-2089N	36	33	35	12
20	AR15V31-26-2285N	42	37	40	43
21	AR15V41-10-2443N	44	38	41	47
22	ARNCDH12753-103-1536M	39	35	37	29
23	GAFHBMAS14031-201	37	32	34	10
24	GA151313-LDH127-19E36	38	34	36	20
25	GA151313-LDH224-19E38	38	33	36	17
26	GA10457-19LE13	34	32	33	3
27	GANC12642-12-19LE16	39	32	36	18
28	GA15328-18E52F	39	36	37	31
29	KWS216	42	37	40	44
30	KWS238	41	36	38	39
31	KWS246	39	36	38	34
32	KWS263	40	37	39	41
33	KWS333	39	35	37	25
34	LA13045D-173	42	34	38	37
35	LA13045D-160	40	36	38	38
36	LA13181D-151A	40	34	37	26
37	LA15166LDH296	37	33	35	13
38	LA15203LDH075	41	34	38	35
39	LA15VDH-FHB-MAS10-16	41	37	39	42
40	LANC9337-63-4	35	30	32	2
41	15VDH-FHB-MAS22-14	37	29	33	4
42	15VDH-FHB-MAS38-01	34	29	31	1
43	15VDH-FHB-MAS17-23	38	32	35	15
44	15VDH-FHB-MAS34-18	37	31	34	9
45	16VDH-SRW01-120	34	32	33	5
46	16VDH-SRW09-025	40	34	37	27
47	16VDH-SRW06-131	36	32	34	8
48	VA18FHB-58	37	32	34	11
	Mean	39	34	36	
	LSD (0.05)	.	2	2	
	CV%	.	3.7	3.0	

Leaf Disease Ratings

CULTIVAR/ DESIGNATION	Powdery Mildew Reaction 0-9 Florence SC	Powdery Mildew Reaction 0-9 Warsaw VA	Leaf Rust Reaction 0-9 Warsaw VA	<i>Stagonospora nodorum</i> Reaction 0-9 Warsaw VA
	1 ERNIE	2.5	2.0	7
2 COKER9835	2.0	1.0	1	5
3 BESS	5.5	2.0	7	3
4 JAMESTOWN	3.5	0.0	4	6
5 SS 8641	2.0	0.0	1	7
6 Pioneer 26R46	5.0	0.0	5	6
7 NC11546-14	1.0	0.0	1	5
8 NC12642-81	3.0	0.0	6	5
9 NC15-21834	0.5	0.0	1	5
10 NC15-21835	2.0	0.0	1	5
11 NC16-19449	1.0	0.0	1	5
12 NC11363-25	3.0	0.0	1	5
13 NC12164-94	2.0	0.0	4	5
14 NC12193-49	1.0	0.0	3	5
15 AR12002-0024N	3.5	0.0	1	5
16 AR12486-2417N	4.5	0.0	0	3
17 AR12486-2419N	2.5	0.0	0	4
18 AR12486-2420N	2.5	0.0	0	4
19 AR15V21-09-2089N	3.5	0.0	1	5
20 AR15V31-26-2285N	4.0	0.0	0	6
21 AR15V41-10-2443N	4.0	0.0	0	4
22 ARNCDH12753-103-1536M	1.0	0.0	0	4
23 GAFHBMAS14031-201	2.5	0.0	2	7
24 GA151313-LDH127-19E36	4.0	0.0	0	5
25 GA151313-LDH224-19E38	4.0	0.0	0	5
26 GA10457-19LE13	6.0	0.0	2	6
27 GANC12642-12-19LE16	2.5	0.0	0	5
28 GA15328-18E52F	7.0	0.0	1	5
29 KWS216	7.0	0.0	2	4
30 KWS238	0.5	0.0	4	5
31 KWS246	5.5	2.0	7	4
32 KWS263	3.0	0.0	1	4
33 KWS333	2.5	0.0	2	6
34 LA13045D-173	1.5	0.0	1	6
35 LA13045D-160	2.0	0.0	1	7
36 LA13181D-151A	5.0	1.0	1	6
37 LA15166LDH296	2.0	0.0	1	5
38 LA15203LDH075	3.0	0.0	0	6
39 LA15VDH-FHB-MAS10-16	5.0	0.0	0	7
40 LANCG9337-63-4	1.0	0.0	1	6
41 15VDH-FHB-MAS22-14	0.0	0.0	0	7
42 15VDH-FHB-MAS38-01	1.0	0.0	0	5
43 15VDH-FHB-MAS17-23	2.5	0.0	0	7
44 15VDH-FHB-MAS34-18	3.0	0.0	0	6
45 16VDH-SRW01-120	1.0	0.0	0	5
46 16VDH-SRW09-025	3.0	0.0	2	6
47 16VDH-SRW06-131	1.0	0.0	0	7
48 VA18FHB-58	1.0	0.0	6	5
Mean	2.8	0.2	1.6	5.3
LSD (0.05)	2.5	.	.	.
CV%	60.6	.	.	.

GRAIN YIELD AND TEST WEIGHT.

ENTRY NO	CULTIVAR/ DESIGNATION	YIELD VA		YIELD VA % Mean	TWT VA lb / bu	GEBV NCVA bu / ac
		bu / ac	Rank			
1	ERNIE	87	48	85	57.2	60.5
2	COKER9835	100	28	97	57.4	70.0
3	BESS	97	35	94	59.3	59.5
4	JAMESTOWN	98	32	96	60.2	70.9
5	SS 8641	101	24	99	59.3	75.5
6	Pioneer 26R46	102	22	100	59.0	.
7	NC11546-14	101	24	98	60.2	76.1
8	NC12642-81	98	32	96	59.7	77.4
9	NC15-21834	99	30	96	59.8	72.2
10	NC15-21835	105	15	102	61.2	70.3
11	NC16-19449	96	37	94	59.5	72.8
12	NC11363-25	110	7	107	60.9	71.3
13	NC12164-94	109	8	106	60.2	75.5
14	NC12193-49	109	8	106	58.8	76.6
15	AR12002-0024N	89	47	87	60.5	69.6
16	AR12486-2417N	104	18	102	60.1	71.3
17	AR12486-2419N	102	22	100	60.4	70.0
18	AR12486-2420N	99	30	97	59.6	68.7
19	AR15V21-09-2089N	98	32	96	59.8	72.5
20	AR15V31-26-2285N	91	43	89	60.5	74.2
21	AR15V41-10-2443N	90	45	88	59.7	72.4
22	ARNCDH12753-103-1536M	103	20	101	61.2	73.0
23	GAFHBMAS14031-201	96	37	94	60.4	66.6
24	GA151313-LDH127-19E36	106	13	103	61.0	73.3
25	GA151313-LDH224-19E38	119	1	116	61.7	77.0
26	GA10457-19LE13	103	20	100	60.0	70.1
27	GANC12642-12-19LE16	109	8	106	60.4	77.6
28	GA15328-18E52F	105	15	103	60.7	69.0
29	KWS216	115	4	113	58.8	73.9
30	KWS238	118	2	116	59.8	76.7
31	KWS246	108	11	106	58.1	65.6
32	KWS263	117	3	114	58.9	72.2
33	KWS333	101	24	99	58.9	66.1
34	LA13045D-173	91	43	89	61.1	71.6
35	LA13045D-160	93	41	91	61.0	.
36	LA13181D-151A	108	11	106	60.6	66.5
37	LA15166LDH296	113	6	110	60.2	75.7
38	LA15203LDH075	106	13	103	57.8	76.6
39	LA15VDH-FHB-MAS10-16	93	41	90	59.4	74.5
40	LANC9337-63-4	100	28	98	59.9	72.8
41	15VDH-FHB-MAS22-14	90	45	88	59.7	75.7
42	15VDH-FHB-MAS38-01	115	4	113	56.9	71.8
43	15VDH-FHB-MAS17-23	104	18	101	59.0	72.3
44	15VDH-FHB-MAS34-18	97	35	95	62.1	74.7
45	16VDH-SRW01-120	105	15	103	61.0	72.9
46	16VDH-SRW09-025	101	24	99	58.9	77.9
47	16VDH-SRW06-131	96	37	94	59.7	74.1
48	VA18FHB-58	96	37	94	57.7	70.4

Mean	102		59.8
LSD (0.05)	.	.	.
CV%	.	.	.
Correlation With Predicted	0.28	.	.

Hessian Fly Screening (Resistant - Susceptible Plants)¹

CULTIVAR/ DESIGNATION	R-S BIO B	R-S BIO C	R-S BIO D	R-S BIO L	H13
1 ERNIE	0-20	0-13	0-19	0-21	no
2 COKER9835	0-17	0-18	0-17	0-18	no
3 BESS	0-16	0-20	0-21	0-19	no
4 JAMESTOWN	19-0	21-1	15-2	0-18	no
5 SS 8641	20-3	14-3	17-3	0-17	no
6 Pioneer 26R46	0-16	0-16	0-23	0-17	no
7 NC11546-14	18-0	15-0	19-0	18-1	yes
8 NC12642-81	14-1	18-0	18-0	17-1	yes
9 NC15-21834	0-19	0-14	0-19	0-15	fail
10 NC15-21835	0-16	0-20	0-18	0-17	no
11 NC16-19449	16-0	20-0	17-0	0-17	no
12 NC11363-25	18-2	0-14	0-19	0-19	no
13 NC12164-94	21-0	17-0	17-1	0-17	no
14 NC12193-49	15-0	20-0	16-0	17-2	het
15 AR12002-0024N	17-1	16-0	18-3	0-17	no
16 AR12486-2417N	0-19	19-3	0-18	0-20	no
17 AR12486-2419N	0-17	0-19	0-18	0-17	no
18 AR12486-2420N	0-16	19-3	0-14	0-19	no
19 AR15V21-09-2089N	0-19	14-3	0-19	0-19	no
20 AR15V31-26-2285N	18-1	21-0	18-0	0-17	no
21 AR15V41-10-2443N	0-19	0-16	0-20	0-19	no
22 ARNCDH12753-103-1536M	16-3	21-1	15-3	0-23	no
23 GAFHBMAS14031-201	19-0	17-0	20-0	0-19	no
24 GA151313-LDH127-19E36	18-0	19-0	15-3	20-0	yes
25 GA151313-LDH224-19E38	21-0	22-0	22-0	19-0	yes
26 GA10457-19LE13	19-0	21-0	17-0	19-2	yes
27 GANC12642-12-19LE16	20-0	22-0	20-0	0-23	no
28 GA15328-18E52F	21-0	18-0	18-0	19-0	het
29 KWS216	17-1	14-0	18-0	11-0	yes
30 KWS238	16-0	17-2	17-0	0-16	no
31 KWS246	0-17	14-3	0-18	0-16	no
32 KWS263	0-18	0-14	0-17	0-18	no
33 KWS333	0-21	17-3	0-21	0-21	no
34 LA13045D-173	21-0	20-0	20-1	0-16	no
35 LA13045D-160	21-0	17-1	15-1	0-17	no
36 LA13181D-151A	0-15	19-3	0-20	0-15	no
37 LA15166LDH296	17-0	13-0	18-0	22-0	yes
38 LA15203LDH075	12-1	15-0	15-1	0-15	no
39 LA15VDH-FHB-MAS10-16	21-0	18-0	22-0	0-13	no
40 LANC9337-63-4	18-0	20-1	19-1	0-16	no
41 15VDH-FHB-MAS22-14	0-20	12-6	0-18	0-19	no
42 15VDH-FHB-MAS38-01	20-0	18-0	18-0	21-0	yes
43 15VDH-FHB-MAS17-23	0-19	0-19	0-21	0-17	no
44 15VDH-FHB-MAS34-18	20-0	23-0	18-0	18-0	yes
45 16VDH-SRW01-120	15-1	24-0	17-0	0-20	no
46 16VDH-SRW09-025	16-0	19-0	17-0	0-15	no
47 16VDH-SRW06-131	17-0	18-0	14-4	0-14	no
48 VA18FHB-58	0-16	0-15	0-14	0-14	no

¹ Sue Cambron, USDA-ARS, Dept Entomology, Purdue Univ.

Milling and Baking Quality Scores¹

Cultivar/ Designation	FLOUR YIELD %	SOFT. EQUIV. %	TEST WEIGHT lb/bu	KERNEL PROT. (at 12%)	FLOUR PROT. (at 14%)	LACTIC ACID SRC(%)	Na ₂ CO ₃ SRC %	SKCS Ker. Hardness	SKCS Ker. Dia. mm	SKCS Ker. Wt mg
1 ERNIE	65.8	57.0	58.0	10.3	7.5	93	66.3	-0.4	3.2	47.7
2 COKER9835	67.6	65.0	57.6	9.7	7.3	96	74.3	2.6	2.8	41.0
3 BESS	66.9	56.7	59.1	9.1	7.3	103	69.7	12.4	2.7	39.3
4 JAMESTOWN	66.1	56.4	60.3	10.4	7.8	117	72.2	11.4	3.0	39.2
5 SS 8641	67.1	56.8	59.4	10.3	8.1	129	66.8	13.8	2.9	42.3
6 Pioneer 26R46	71.1	56.3	59.4	9.5	7.9	119	64.4	0.1	3.1	49.1
7 NC11546-14	66.8	58.6	60.4	10.6	8.8	134	71.8	22.3	3.0	43.1
8 NC12642-81	67.8	59.5	59.0	10.1	7.9	119	67.6	13.5	3.0	41.8
9 NC15-21834	65.9	56.0	60.1	9.1	7.8	124	72.8	11.1	3.0	48.3
10 NC15-21835	67.1	57.2	60.1	9.8	8.2	130	73.2	11.9	3.0	44.6
11 NC16-19449	66.6	53.7	59.9	11.4	9.0	130	68.7	17.8	2.9	42.4
12 NC11363-25	66.0	59.0	59.3	10.6	8.2	118	72.4	11.1	2.9	40.9
13 NC12164-94	66.7	54.2	60.3	10.9	9.2	133	69.3	16.6	2.9	41.5
14 NC12193-49	68.2	55.7	59.0	10.8	8.3	112	66.8	9.8	3.0	44.2
15 AR12002-0024N	71.5	53.1	60.2	11.2	8.8	127	68.5	14.3	3.1	44.8
16 AR12486-2417N	67.4	55.4	60.1	10.7	8.4	123	71.6	21.7	3.0	40.9
17 AR12486-2419N	68.6	56.7	60.3	10.6	8.1	117	71.0	15.3	3.0	42.1
18 AR12486-2420N	67.8	56.3	59.8	11.0	8.2	120	69.7	15.4	3.0	42.9
19 AR15V21-09-2089N	67.9	56.4	60.0	10.2	8.1	118	68.3	24.2	2.8	35.9
20 AR15V31-26-2285N	67.1	57.0	60.1	10.2	8.1	116	70.4	18.2	2.9	40.7
21 AR15V41-10-2443N	62.6	50.4	59.5	11.9	9.5	128	82.2	37.0	2.8	35.6
22 ARNCDH12753-103-1536M	67.8	57.4	60.5	11.1	8.9	146	68.4	14.4	3.0	41.8
23 GAFHBMAS14031-201	66.6	55.8	60.1	10.6	7.9	119	68.6	10.6	2.9	38.0
24 GA151313-LDH127-19E36	66.6	59.0	60.4	10.0	7.9	124	69.9	13.8	2.8	39.5
25 GA151313-LDH224-19E38	67.2	55.6	61.6	10.4	8.3	134	69.7	24.0	2.7	38.1
26 GA10457-19LE13	69.0	57.7	58.9	9.8	7.8	117	64.7	8.3	2.9	38.4
27 GANC12642-12-19LE16	66.1	62.6	60.5	9.9	7.9	136	75.1	11.7	3.0	40.7
28 GA15328-18E52F	68.6	55.8	61.0	9.9	7.7	105	68.4	12.1	2.9	43.4
29 KWS216	68.9	56.8	59.1	10.7	8.5	102	66.1	12.6	2.9	48.9
30 KWS238	66.2	57.1	59.3	11.4	8.8	126	71.6	13.0	3.0	46.7
31 KWS246	68.1	58.2	58.0	9.9	7.7	99	69.4	16.1	2.9	44.5
32 KWS263	69.1	59.7	58.2	10.7	8.0	107	67.7	5.7	2.9	48.2
33 KWS333	67.0	59.7	58.0	9.7	6.9	129	75.3	10.4	3.0	43.0
34 LA13045D-173	67.9	55.1	61.2	11.0	9.0	146	68.5	18.6	2.9	37.2
35 LA13045D-80	67.4	55.1	60.6	10.7	8.5	130	68.7	20.8	2.8	37.6
36 LA13181D-151A	67.7	61.0	59.7	9.6	7.3	125	70.5	3.7	2.9	42.7
37 LA15166LDH296	71.3	62.3	59.3	9.6	7.5	118	69.2	8.7	3.0	42.4
38 LA15203LDH075	66.7	57.9	58.1	10.4	7.6	122	70.6	15.0	2.9	40.8
39 LA15VDH-FHB-MAS10-16	64.3	54.3	59.0	10.7	8.2	106	68.2	23.9	2.7	35.6
40 LANCG9337-63-4	66.3	56.0	60.3	11.4	8.4	111	69.6	8.4	3.0	40.3
41 15VDH-FHB-MAS22-14	66.9	56.0	60.9	10.6	7.7	127	70.2	21.1	2.9	36.9
42 15VDH-FHB-MAS38-01	67.3	56.5	57.4	9.8	6.8	94	66.4	3.1	3.0	40.9
43 15VDH-FHB-MAS17-23	65.4	60.1	59.3	10.0	7.7	114	69.2	15.8	2.8	37.8
44 15VDH-FHB-MAS34-18	68.4	60.0	60.6	11.0	8.4	117	71.7	8.1	2.9	39.6
45 16VDH-SRW01-120	67.1	55.0	61.1	10.1	7.8	115	72.4	30.7	2.9	35.8
46 16VDH-SRW09-025	66.9	62.2	58.9	9.3	6.8	115	71.5	7.0	2.9	42.9
47 16VDH-SRW06-131	67.5	57.9	59.8	10.3	7.7	125	69.7	15.9	3.1	44.5
48 VA18FHB-58	66.3	57.7	58.5	10.1	7.8	73	70.0	10.9	3.0	43.6
BRANSON	68.3	60.8	57.8	10.0	7.8	121.9	69.4	6.9	2.8	42.0
SHIRLEY	69.1	58.9	57.4	9.6	7.2	90.6	70.9	1.7	2.8	43.8
PIONEER 26R59	68.9	62.8	58.7	9.4	6.9	102.5	72.0	3.0	2.8	46.0
HILLIARD	67.0	60.3	59.6	10.1	7.6	122.0	70.3	8.9	2.9	43.2
Mean	67.4	57.5	59.5	10.3	8.0	117.8	70.0	13.2	2.9	41.8
Standard Deviation	1.5	2.7	1.0	0.6	0.6	13.7	3.0	7.3	0.1	3.5

¹ Seed kindly supplied to USDA-ARS Wooster Quality Lab by Carl Griffey, Va Tech.

Means Across Locations 2019-20

	Cultivar/ Designation	FHB Rating		FHB Incidence		FHB Severity		FHB Index		FDK		ISK		DON	
		Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank		
1	ERNIE	3	14	50	16	60	36	36	31	11	15	38	23	5	21
2	COKER9835	7	46	87	46	80	45	70	46	48	47	69	47	10	45
3	BESS	2	4	52	20	42	11	22	12	12	17	31	14	3	2
4	JAMESTOWN	3	14	54	24	45	18	32	24	16	29	37	21	3	2
5	SS 8641	7	46	88	47	85	47	75	47	58	48	71	48	20	48
6	Pioneer 26R46	7	46	105	48	87	48	82	48	47	46	65	46	18	47
7	NC11546-14	2	4	53	21	48	23	26	18	13	22	37	21	5	21
8	NC12642-81	2	4	58	28	44	17	27	20	10	12	35	18	3	2
9	NC15-21834	2	4	56	26	50	25	32	26	13	22	38	23	6	32
10	NC15-21835	2	4	53	21	58	34	39	34	13	22	39	25	6	32
11	NC16-19449	4	32	45	11	42	11	25	17	22	37	33	17	5	21
12	NC11363-25	3	14	50	16	47	20	27	21	13	22	36	20	5	21
13	NC12164-94	3	14	58	28	52	27	31	22	12	17	39	25	4	12
14	NC12193-49	2	4	31	4	31	4	10	2	6	3	23	2	3	2
15	AR12002-0024N	4	32	63	32	54	30	38	32	12	17	40	29	6	32
16	AR12486-2417N	3	14	68	36	47	20	32	25	12	17	39	25	5	21
17	AR12486-2419N	3	14	64	33	51	26	33	28	16	29	44	35	5	21
18	AR12486-2420N	3	14	68	36	48	23	33	27	16	29	43	31	5	21
19	AR15V21-09-2089N	2	4	43	10	35	6	17	5	8	6	26	5	3	2
20	AR15V31-26-2285N	2	4	50	16	38	10	21	11	6	3	29	7	3	2
21	AR15V41-10-2443N	1	1	47	14	42	11	23	13	9	8	30	11	1	1
22	ARNCDH12753-103-1536M	3	14	85	45	67	39	53	39	27	45	53	42	9	43
23	GAFHBMAS14031-201	3	14	51	19	43	16	24	15	7	5	31	13	3	2
24	GA151313-LDH127-19E36	5	41	73	38	71	43	55	41	25	42	55	44	6	32
25	GA151313-LDH224-19E38	5	41	55	25	52	27	31	23	18	32	39	25	5	21
26	GA10457-19LE13	3	14	75	39	62	37	44	38	12	17	48	38	4	12
27	GANC12642-12-19LE16	3	14	35	5	42	11	21	10	11	15	30	11	5	21
28	GA15328-18E52F	5	41	77	40	82	46	63	45	19	33	51	39	8	40
29	KWS216	4	32	80	43	70	42	57	44	26	43	55	44	9	43
30	KWS238	3	14	77	40	68	40	54	40	20	34	52	41	8	40
31	KWS246	3	14	59	31	62	37	42	36	21	35	43	31	7	36
32	KWS263	3	14	77	40	72	44	57	43	22	37	54	43	10	45
33	KWS333	1	1	47	14	42	11	24	16	13	22	31	14	3	2
34	LA13045D-173	3	14	36	8	30	3	11	3	10	12	25	4	4	12
35	LA13045D-160	5	41	57	27	54	30	33	29	24	41	43	31	4	12
36	LA13181D-151A	4	32	66	35	56	33	38	33	13	22	44	35	4	12
37	LA15166LDH296	3	14	81	44	68	40	56	42	26	43	51	39	7	36
38	LA15203LDH075	4	32	58	28	55	32	39	35	21	35	43	31	7	36
39	LA15VDH-FHB-MAS10-16	2	4	35	5	37	7	20	7	8	6	29	7	3	2
40	LANC9337-63-4	4	32	30	1	32	5	17	6	13	22	26	5	4	12
41	15VDH-FHB-MAS22-14	2	4	30	1	27	2	17	4	5	1	24	3	4	12
42	15VDH-FHB-MAS38-01	3	14	30	1	20	1	7	1	9	8	18	1	3	2
43	15VDH-FHB-MAS17-23	5	41	42	9	45	18	21	9	10	12	29	7	5	21
44	15VDH-FHB-MAS34-18	3	14	45	11	47	20	26	19	5	1	35	18	4	12
45	16VDH-SRW01-120	4	32	45	11	37	7	23	14	9	8	32	16	5	21
46	16VDH-SRW09-025	4	32	65	34	52	27	35	30	23	39	42	30	7	36
47	16VDH-SRW06-131	4	32	53	21	59	35	42	37	23	39	44	35	8	40
48	VA18FHB-58	1	1	35	5	37	7	20	8	9	8	29	7	4	12
	Mean	3		55		50.0		33		17		37		6	
	LSD (0.05)	2		26		25		28		20		19		5	
	CV%	30.8		23.2		24		41.9		59.8		24.4		51.8	
	Correlations with Predic.	.		.		0.67		.		0.64		.		0.48	

Means Across Locations 2018- 2019

Cultivar/ Designation	Head. Date	Plant Ht.	Flour Yield		Softness Equiv.		Hessian Fly		Fhb1	Fhb Massey 3BL	Jamestown 1B	Bess 2B	Bess 3B	NC-Neuse 1A	NC-Neuse 6A		
			Rank	Rank	Rank	Rank	Bio. L	H13									
1 ERNIE	106	13	36	16	65.8	45	57.0	22	0-21	no	no	yes	no	no	no	het	yes
2 COKER9835	109	28	34	6	67.6	18	65.0	1	0-18	no	no	no	no	no	no	no	no
3 BESS	110	32	39	40	66.9	29	56.7	26	0-19	no	no	no	yes	yes	yes	yes	no
4 JAMESTOWN	101	2	34	7	66.1	41	56.4	29	0-18	no	no	no	yes	no	no	yes	no
5 SS 8641	106	13	36	21	67.1	24	56.8	24	0-17	no	no	no	no	no	no	no	no
6 Pioneer 26R46	105	9	38	32	71.1	3	56.3	31	0-17	no	no	no	no	no	no	het	no
7 NC11546-14	110	32	37	24	66.8	32	58.6	13	18-1	yes	Fhb1	no	yes	no	no	yes	no
8 NC12642-81	108	22	36	19	67.8	14	59.5	10	17-1	yes	het	het	het	no	no	yes	no
9 NC15-21834	112	43	40	46	65.9	44	56.0	33	0-15	fail	no	fail	fail	no	fail	yes?	fail
10 NC15-21835	113	47	40	45	67.1	24	57.2	20	0-17	no	no	no	no	no	no	yes	no
11 NC16-19449	109	28	38	33	66.6	35	53.7	46	0-17	no	no	no	yes	no	no	yes	yes
12 NC11363-25	110	32	36	22	66.0	43	59.0	11	0-19	no	no	no	het	no	no	yes	yes
13 NC12164-94	108	22	38	36	66.7	33	54.2	45	0-17	no	Fhb1	no	yes	no	no	no	het
14 NC12193-49	107	16	35	14	68.2	10	55.7	38	17-2	het	het	no	het	no	no	no	het
15 AR12002-0024N	108	22	41	48	71.5	1	53.1	47	0-17	no	no	no	yes	no	no	no	het
16 AR12486-2417N	111	41	37	30	67.4	20	55.4	40	0-20	no	no	no	no	no	no	no	no
17 AR12486-2419N	110	32	37	28	68.6	7	56.7	26	0-17	no	no	no	no	no	no	no	yes
18 AR12486-2420N	110	32	36	23	67.8	14	56.3	31	0-19	no	no	no	het	no	no	het	no
19 AR15V21-09-2089N	110	32	35	12	67.9	12	56.4	29	0-19	no	Fhb1	no	no	no	no	no	no
20 AR15V31-26-2285N	108	22	40	43	67.1	24	57.0	22	0-17	no	Fhb1	no	no	no	no	no	no
21 AR15V41-10-2443N	107	16	41	47	62.6	48	50.4	48	0-19	no	Fhb1	no	no	no	no	no	no
22 ARNC DH12753-103-1536M	112	44	37	29	67.8	14	57.4	19	0-23	no	no	no	yes	no	no	het	fail
23 GAFHBMAS14031-201	103	5	34	10	66.6	35	55.8	36	0-19	no	het	no	no	no	no	het	no
24 GA151313-LDH127-19E36	108	22	36	20	66.6	35	59.0	11	20-0	yes	no	no	yes	no	no	no	no
25 GA151313-LDH224-19E38	105	9	36	17	67.2	23	55.6	39	19-0	yes	no	no	yes	no	no	no	no
26 GA10457-19LE13	109	28	33	3	69.0	5	57.7	17	19-2	yes	no	no	no	no	yes	no	yes
27 GANC12642-12-19LE16	107	16	36	18	66.1	41	62.6	2	0-23	no	Fhb1	no	yes	no	no	yes	no
28 GA15328-18E52F	108	22	37	31	68.6	7	55.8	36	19-0	het	het	no	no	no	no	no	no
29 KWS216	110	32	40	44	68.9	6	56.8	24	11-0	yes	no	no	no	no	no	no	no
30 KWS238	112	44	38	39	66.2	40	57.1	21	0-16	no	no	no	no	no	no	no	fail
31 KWS246	112	44	38	34	68.1	11	58.2	14	0-16	no	no	no	no	no	no	no	no
32 KWS263	110	32	39	41	69.1	4	59.7	8	0-18	no	no	no	no	no	no	no	no
33 KWS333	111	41	37	25	67.0	28	59.7	8	0-21	no	no	no	no	no	no	no	fail
34 LA13045D-173	105	9	38	37	67.9	12	55.1	41	0-16	no	Fhb1	no	no	no	no	no	fail
35 LA13045D-160	105	9	38	38	67.4	20	55.1	41	0-17	no	Fhb1	no	no	no	no	no	no
36 LA13181D-151A	107	16	37	26	67.7	17	61.0	5	0-15	no	Fhb1	no	no	no	no	no	het
37 LA15166LDH296	113	47	35	13	71.3	2	62.3	3	22-0	yes	no	no	yes	no	no	yes	no
38 LA15203LDH075	110	32	38	35	66.7	33	57.9	15	0-15	no	no	no	yes	no	no	yes	no
39 LA15VDH-FHB-MAS10-16	103	5	39	42	64.3	47	54.3	44	0-13	no	Fhb1	no	yes	no	no	no	no
40 LANC9337-63-4	101	2	32	2	66.3	38	56.0	33	0-16	no	no	no	yes	no	no	yes	no
41 15VDH-FHB-MAS22-14	104	7	33	4	66.9	29	56.0	33	0-19	no	Fhb1	yes	no	no	no	no	het
42 15VDH-FHB-MAS38-01	101	2	31	1	67.3	22	56.5	28	21-0	yes	Fhb1	no	yes	no	no	no	no
43 15VDH-FHB-MAS17-23	100	1	35	15	65.4	46	60.1	6	0-17	no	Fhb1	no	no	no	no	no	no
44 15VDH-FHB-MAS34-18	107	16	34	9	68.4	9	60.0	7	18-0	yes	Fhb1	no	no	no	no	no	het
45 16VDH-SRW01-120	107	16	33	5	67.1	24	55.0	43	0-20	no	Fhb1	no	no	no	no	no	het
46 16VDH-SRW09-025	109	28	37	27	66.9	29	62.2	4	0-15	no	no	no	yes	no	no	no	no
47 16VDH-SRW06-131	106	13	34	8	67.5	19	57.9	15	0-14	no	no	no	yes	no	no	no	no
48 VA18FHB-58	104	7	34	11	66.3	39	57.7	17	0-14	no	Fhb1	no	no	no	no	no	no

Mean	108	36	67.3	57.3
LSD (0.05)	6.0	2	.	.
CV%	3	3	.	.

Means Over the 2019 and 2020 Seasons

Cultivar/ Designation	FHB Rating 0 - 9	FHB Incidence %	FHB Severity %	FHB Index	FDK %	ISK	DON ppm	Heading Date Julian	Plant Height in	Flour Yield %	Softness Equivalent %
ERNIE	3	56	41	26	14	35	5	114	34	67.6	57.8
COKER9835	7	93	73	68	58	71	13	116	32	68.7	65.2
BESS	2	61	36	21	14	34	4	116	37	67.2	57.0
JAMESTOWN	3	61	37	25	19	37	4	110	33	67.3	58.2
SS 8641	7	92	79	73	67	72	20	114	34	67.6	57.2
NC11546-14	2	62	39	25	18	37	5	117	35	67.1	59.9
NC12642-81	3	65	40	27	14	36	4	114	35	68.4	59.5
NC15-21834	3	65	47	32	18	41	7	119	38	66.1	55.8
NC15-21835	3	65	49	35	19	41	7	118	37	67.3	57.0
Mean	4	69	49	37	27	45	8	115	35	67.5	58.6
LSD (0.05)	1	8	14	11	10	6	3	3	2	2.0	2.3
CV%	11.7	5.0	12.8	13.4	15.5	5.7	15.2	1.3	2.3	1.1	1.7

Means and Variances of Genotypic Estimated Breeding Values for Severity of progenies from selected crosses between entries in the 2018-19 and 2019-20 nurseries, plus the means for the 10 % most resistant progeny in each cross.

Parent 1	Year in Nursery	Parent 2	Year in Nursery	Severity Genotype Estimated Breeding Values of Cross Progenies		
				Mean	Variance	Mean lowest 10%
BESS	2020	LA15VDH-FHB-MAS10-16	2019	25.4	11.3	19.6
BESS	2020	KWS219	2019	25.8	11.2	19.9
BESS	2020	NC11546-14	2020	26.7	14.4	20.0
BESS	2020	15VDH-FHB-MAS17-23	2020	26.5	12.8	20.2
BESS	2020	LANC9337-63-4	2020	26.0	9.2	20.7
BESS	2020	16VDH-SRW01-120	2020	27.0	12.4	20.8
BESS	2020	NC12193-49	2020	27.6	14.2	21.0
BESS	2020	GA-18LE43F	2019	26.3	8.9	21.0
BESS	2020	NC14-23372	2019	26.1	8.4	21.1
KWS219	2019	LA15VDH-FHB-MAS10-16	2019	26.9	10.5	21.2
BESS	2020	15VDH-FHB-MAS38-01	2020	26.9	10.2	21.4
KWS219	2019	LA15VDH-FHB-MAS10-16	2020	27.1	10.6	21.4
KWS219	2019	15VDH-FHB-MAS17-23	2020	28.0	13.8	21.4
BESS	2020	LES-167851	2019	27.7	12.2	21.5
ERNIE	2020	BESS	2020	26.9	9.4	21.5
BESS	2020	LA15VDH-FHB-MAS10-18	2019	27.7	12.2	21.6
NC11546-14	2020	KWS219	2019	28.4	15.5	21.8
BESS	2020	VA17W-74	2019	28.2	13.2	21.8
BESS	2020	AR15V31-26-2285N	2020	28.2	12.5	21.9
BESS	2020	VA18FHB-58	2020	27.8	10.4	22.1
ERNIE	2020	LA15VDH-FHB-MAS10-16	2019	28.1	11.4	22.2
BESS	2020	LA13181D-151A	2020	28.2	11.2	22.3
BESS	2020	JAMESTOWN	2020	27.7	9.5	22.3
ERNIE	2020	LA15VDH-FHB-MAS10-16	2020	28.3	11.5	22.3
KWS219	2019	LANC9337-63-4	2020	27.5	8.7	22.4
NC14-23372	2019	LA15VDH-FHB-MAS10-16	2019	27.4	8.4	22.5
KWS219	2019	VA17W-74	2019	29.7	16.7	22.6
NC14-23372	2019	LA15VDH-FHB-MAS10-16	2020	27.6	8.4	22.6
LA15VDH-FHB-MAS10-16	2019	LANC9337-63-4	2020	27.3	7.2	22.7
LA15VDH-FHB-MAS10-16	2019	15VDH-FHB-MAS38-01	2020	28.2	10.1	22.7
BESS	2020	GA-18ELDH29F	2019	28.3	10.5	22.7
NC14-23372	2019	KWS219	2019	27.9	8.9	22.7
BESS	2020	DH13SRW023-201	2019	28.1	9.5	22.8
GA-18LE43F	2019	LA15VDH-FHB-MAS10-16	2019	27.6	7.7	22.8
LA15VDH-FHB-MAS10-16	2020	LANC9337-63-4	2020	27.5	7.2	22.8
LA15VDH-FHB-MAS10-16	2020	15VDH-FHB-MAS38-01	2020	28.4	10.1	22.9
BESS	2020	GANC12642-12-19LE16	2020	29.6	15.1	22.9
KWS219	2019	16VDH-SRW01-120	2020	28.5	10.5	22.9
ERNIE	2020	15VDH-FHB-MAS17-23	2020	29.2	12.6	23.0
ERNIE	2020	NC11546-14	2020	29.4	13.4	23.0
LES-172093	2019	LA15VDH-FHB-MAS10-16	2019	28.6	10.2	23.0
GA-18LE43F	2019	LA15VDH-FHB-MAS10-16	2020	27.7	7.7	23.0
NC11546-14	2020	LA15VDH-FHB-MAS10-16	2019	28.0	8.3	23.1
NC14-23372	2019	NC11546-14	2020	28.8	10.6	23.2
BESS	2020	NC12642-81	2019	30.0	15.3	23.2
BESS	2020	AR15V41-10-2443N	2020	28.9	10.7	23.2

Means and Variances of Genotypic Estimated Breeding Values for FDK of progenies from selected crosses between entries in the 2018-19 and 2019-20 nurseries, plus the means for the 10 % most resistant progeny in each cross.

Parent 1	Year in Nursery	Parent 2	Year in Nursery	FDK		
				Genotype Estimated Breeding Values of Cross Progenies		
				Mean	Variance	Mean lowest 10%
BESS	2020	KWS219	2019	17.1	9.0	11.9
BESS	2020	LANC9337-63-4	2020	17.0	8.2	12.1
KWS219	2019	15VDH-FHB-MAS33-30	2019	18.4	12.8	12.1
KWS219	2019	LES-70022	2019	17.4	9.1	12.2
KWS219	2019	VA17W-74	2019	19.0	15.2	12.3
KWS219	2019	LANC9337-63-4	2020	17.2	7.5	12.4
KWS219	2019	LA13181D-151A	2020	18.7	13.4	12.4
KWS219	2019	VA17W-75	2019	19.0	14.6	12.4
BESS	2020	GA-18LE43F	2019	17.9	10.1	12.4
LES-70022	2019	LANC9337-63-4	2020	17.5	8.1	12.5
BESS	2019	15VDH-FHB-MAS33-30	2019	18.2	10.5	12.5
BESS	2019	LA13181D-151A	2020	18.6	12.0	12.6
LES-70022	2019	15VDH-FHB-MAS33-30	2019	18.7	11.9	12.6
KWS219	2019	13VTK434-89	2019	18.3	10.8	12.6
LES-70022	2019	LA15VDH-FHB-MAS10-16	2019	18.7	11.7	12.7
KWS219	2019	15VDH-FHB-MAS17-23	2020	19.5	14.7	12.8
BESS	2019	LES-70022	2019	17.3	6.5	12.9
BESS	2019	LA15VDH-FHB-MAS10-16	2019	18.2	9.4	12.9
KWS219	2019	LA15VDH-FHB-MAS10-16	2019	18.3	9.8	12.9
BESS	2019	VA17W-74	2019	18.9	11.0	13.0
KWS219	2019	LES-172093	2019	17.9	8.0	13.0
LES-70022	2019	LA15VDH-FHB-MAS10-16	2020	19.0	11.6	13.1
GA-18LE43F	2019	LANC9337-63-4	2020	18.1	8.3	13.1
LES-172093	2019	LANC9337-63-4	2020	17.9	7.6	13.1
LES-70022	2019	15VDH-FHB-MAS17-23	2020	19.8	15.0	13.1
GA-18LE43F	2019	KWS219	2019	18.2	8.9	13.1
BESS	2020	15VDH-FHB-MAS17-23	2020	19.4	12.9	13.2
BESS	2020	LA15VDH-FHB-MAS10-18	2019	18.8	10.3	13.2
15VDH-FHB-MAS33-30	2019	LANC9337-63-4	2020	18.4	8.7	13.2
LES-70022	2019	LA13181D-151A	2020	19.1	10.9	13.3
NC12642-81	2019	KWS219	2019	20.0	14.9	13.3
BESS	2020	LA15VDH-FHB-MAS10-16	2020	18.6	9.3	13.3
LES-70022	2019	13VTK434-89	2019	18.6	9.2	13.3
KWS219	2019	LA15VDH-FHB-MAS10-16	2020	18.7	9.7	13.3
LA15VDH-FHB-MAS10-1	2019	LANC9337-63-4	2020	18.4	8.4	13.3
GA-18LE43F	2019	LES-70022	2019	18.4	8.4	13.4
KWS219	2019	LA15VDH-FHB-MAS10-18	2019	18.9	10.2	13.4
13VTK434-89	2019	LANC9337-63-4	2020	18.3	8.3	13.4
GA-18LE43F	2019	13VTK434-89	2019	19.2	11.0	13.4
BESS	2020	VA17W-75	2019	18.9	9.6	13.4
ERNIE	2020	BESS	2020	18.9	10.0	13.5
LES-172093	2019	LES-70022	2019	18.2	6.8	13.6
GA-18LE43F	2019	LES-172093	2019	18.9	9.4	13.6
LES-172093	2019	15VDH-FHB-MAS33-30	2019	19.1	9.9	13.6
LES-70022	2019	LA15VDH-FHB-MAS10-18	2019	19.2	10.2	13.6
GA-18LE43F	2019	VA17W-74	2019	20.0	13.2	13.6
LA15VDH-FHB-MAS10-1	2020	LANC9337-63-4	2020	18.7	8.5	13.7

Means and Variances of Genotypic Estimated Breeding Values for DON of progenies from selected crosses between entries in the 2018-19 and 2019-20 nurseries, plus the means for the 10 % most resistant progeny in each cross.

Parent 1	Year in Nursery	Parent 2	Year in Nursery	DON (ppm)		
				Genotype Estimated Breeding Values of Cross Progenies		
				Mean	Variance	Mean lowest 10%
NC12193-49	2020	15VDH-FHB-MAS34-18	2020	4.1	3.2	0.9
LES-70022	2019	NC12193-49	2020	4.6	3.7	1.2
ARFHBDH2-72	2019	NC12193-49	2020	5.0	4.3	1.4
NC12193-49	2020	AR12002-0024N	2020	4.5	3.0	1.5
NC12193-49	2020	LA13181D-151A	2020	4.5	3.0	1.5
NC12193-49	2020	16VDH-SRW01-120	2020	4.5	2.8	1.6
LA15VDH-FHB-MAS10-18	2019	NC12193-49	2020	5.1	3.9	1.6
NC12193-49	2020	LANC9337-63-4	2020	4.4	2.6	1.6
LES-70022	2019	15VDH-FHB-MAS34-18	2020	5.1	3.8	1.7
15VDH-FHB-MAS33-30	2019	NC12193-49	2020	4.7	3.0	1.8
GA-18LE43F	2019	NC12193-49	2020	4.9	2.7	2.0
13VTK434-89	2019	NC12193-49	2020	5.4	3.7	2.0
NC12642-81	2019	NC12193-49	2020	4.9	2.7	2.1
ARFHBDH2-75	2019	NC12193-49	2020	5.7	4.3	2.1
LES-172093	2019	NC12193-49	2020	5.8	4.5	2.1
LA15VDH-FHB-MAS10-18	2019	AR12002-0024N	2020	6.1	5.4	2.1
NC12193-49	2020	15VDH-FHB-MAS17-23	2020	5.2	3.3	2.1
NC12193-49	2020	LA15VDH-FHB-MAS10-16	2020	5.0	2.6	2.1
LA15VDH-FHB-MAS10-16	2019	NC12193-49	2020	4.9	2.7	2.1
LANC9337-63-4	2020	15VDH-FHB-MAS34-18	2020	5.0	2.6	2.2
NC12164-25T	2019	NC12193-49	2020	5.7	4.1	2.2
NC12164-94	2020	NC12193-49	2020	5.6	3.8	2.2
VA17W-74	2019	NC12193-49	2020	6.1	4.8	2.3
LA13181D-151A	2020	15VDH-FHB-MAS34-18	2020	5.1	2.8	2.3
LES-70022	2019	16VDH-SRW01-120	2020	5.6	3.6	2.3
13VTK429-3	2019	NC12193-49	2020	5.4	3.3	2.3
AR12002-0024N	2020	15VDH-FHB-MAS34-18	2020	5.0	2.5	2.3
JAMESTOWN	2020	NC12193-49	2020	5.3	2.9	2.3
NC12193-49	2020	GANC12642-12-19LE16	2020	5.4	3.1	2.3
GA-18ELD29F	2019	NC12193-49	2020	5.8	4.0	2.3
LA15VDH-FHB-MAS10-18	2019	15VDH-FHB-MAS34-18	2020	5.6	3.7	2.3
BESS	2020	NC12193-49	2020	6.2	5.0	2.3
AR12002-0024N	2020	16VDH-SRW01-120	2020	5.5	3.4	2.4
NC12193-49	2020	AR15V41-10-2443N	2020	5.8	3.9	2.4
AR12002-0024N	2020	LA13181D-151A	2020	5.5	3.2	2.4
NC11546-14	2020	NC12193-49	2020	5.4	2.9	2.5
AR12002-0024N	2020	15VDH-FHB-MAS17-23	2020	6.2	4.6	2.5
VA17W-75	2019	NC12193-49	2020	6.1	4.2	2.5
ARFHBDH2-72	2019	15VDH-FHB-MAS34-18	2020	5.6	3.2	2.5
LES-70022	2019	15VDH-FHB-MAS33-30	2019	5.9	3.6	2.5
15VDH-FHB-MAS17-23	2020	15VDH-FHB-MAS34-18	2020	5.8	3.6	2.5
NC12642-81	2019	LES-70022	2019	6.0	3.8	2.5
KWS242	2019	NC12193-49	2020	6.3	4.6	2.6
AR12002-0024N	2020	LA15VDH-FHB-MAS10-16	2020	6.0	3.7	2.6
LES-70022	2019	LA15VDH-FHB-MAS10-18	2019	6.1	4.0	2.6
NC12193-49	2020	LA13045D-173	2020	6.3	4.6	2.6
LES-70022	2019	LA15VDH-FHB-MAS10-16	2019	6.0	3.8	2.6