SOUTHERN UNIFORM WINTER WHEAT SCAB NURSERY

2019 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.

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LOCATION NOTES

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Florence, South Carolina,
- Cooperator: Rick Boyles
- Clemson University

Griffin, Georgia
- Cooperator: Mohamed Mergoum.
- University of Georgia.

Winnsboro 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.

Columbia, Missouri
- Cooperators: Anne L. McKendry.
- University of Missouri

Lafayette, Indiana
- Cooperator: Don Obert.
- Limagrain Cereal Seeds.

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

Misting system up!!!!!!!!!!!!!!!

Scab inoculations working -- everyone breath easier

Harvesting two-row plots in scab nursery Mt. Holly, VA, 2019

Foxgloves blooming -- time to inoculate

Entry List and Pedigrees, 2019 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	AGS 2035	*AGS2000/Pio26R61 (formally GA981622-5E35)*	CHECK(SUS)	2018-19
7	NC14-23372	*Jamestown // NC05-21937/NC-NEUSE (Fhb1)*	Check (RES)	2018-19
8	DH13SRW023-201	*VA08MAS-369 (McCormick / GA881130LE5) / Jamestown*	Griffey	2017-18
9	NC11546-14	*AGS 2027 / NC09-20986*	Murphy	2018-19
10	NC11331-38	*NC09-20986 / NC08-140*	Murphy	2018-19
11	NC15-21834	*NCD1AG11(Pm37-76 / P26R12 // Jamestown*	Murphy	2018-19
12	NC15-21835	*NCD1AG11(Pm37-76 / P26R12 // Jamestown*	Murphy	2018-19
13	NC15-21836	*NCD1AG11(Pm37-76 / P26R12 // Jamestown*	Murphy	2018-19
14	NC12164-25T	*NC8170-4-3 / Jamestown*	Murphy	2018-19
15	NC12642-81	*NC09-20986 / Hilliard*	Murphy	2018-19
16	NC12753-139	*GA041293-11LE37 / Hilliard*	Murphy	2018-19
17	AR11289-8-1	*LA02006E239/AR01009-3-1*	Mason	2018-19
18	ARLA09179UC-1-1	*LA95135/NC06-27*	Mason	2018-19
19	ARGA09485-10-1	*08453(031238-DH7-7A28/USG 3295)/991209-6E33*	Mason	2018-19
20	AR11255-10-3	*GA001138-8E36/LA02006E239*	Mason	2018-19
21	ARFHBDH2_72	*MDC07027-12-24/KY04C-2004-1-2-1*	Mason	2018-19
22	ARFHBDH2_75	*MDC07027-12-24/KY04C-2004-1-2-1*	Mason	2018-19
23	GA15VDH-FHB-MAS33-18LE46	*MD08-26-H2-7-12-9 / VA11W-278 (NC00-15389/GF951079-2E31 //USG3555(VA02W-555) // HILLIARD (VA11W-108)*	Mergoum	2018-19
24	GA15VDH-FHB-MAS23-18LE43F	*MD08-26-H2-7-12-9 / VA09W-73 (SS520/VA99W-188// TRIBUTE] // VA12W-54 [NC00-15389/GF951079-2E31//USG3555(VA02W-555)*	Mergoum	2018-19
25	GA15VDH-FHB-MAS30-18ESc43F	*HILLIARD (VA11W-108) // MD08-26-H2-7-12-9 / VA11W-278 (NC00-15389/GF951079-2E31//USG3555 (VA02W-555)*	Mergoum	2018-19
26	GA15VDH-FHB-MAS22-18ESc-41F	*MD08-26-H2-7-12-9 / VA09W-73 (SS520/VA99W-188// TRIBUTE] // VA12W-54 [NC00-15389/GF951079-2E31//USG3555(VA02W-555)*	Mergoum	2018-19
27	GA15VDH-FHB-MAS30-18EDH29F	*HILLIARD (VA11W-108) // MD08-26-H2-7-12-9 / VA11W-278 (NC00-15389/GF951079-2E31//USG3555 (VA02W-555)*	Mergoum	2018-19
28	GA15VDH-FHB-MAS27-18ADH33F	*MD08-26-H2-7-12-9 [/ VA11W-278 (NC00-15389/GF951079-2E31 //USG3555(VA02W-555) // HILLIARD (VA11W-108)*	Mergoum	2018-19
29	KWS202	*Branson / SE03 1013-4*	Murche	2018-19
30	KWS207	*VA08WMAS-412 / 10003-1*	Murche	2018-19
31	KWS219	*P4-21 / G09534*	Murche	2018-19
32	KWS240	*VA11W-106 / GA041293-11E37*	Murche	2018-19
33	KWS242	*X08-39D / Featherstone73 (=VA09W-73) // GA041052-11E51*	Murche	2018-19
34	LES 172093	*IL05-4236/Branson*	Obert	2018-19
35	LES 167851	*KY05C-1600-92-9-5/19707*	Obert	2018-19
36	LES 70022	*08364-4/P04287A1-16*	Obert	2018-19
37	LA08080C-31-1	*GA951298-6E44/LA07177,F1(JAMESTOWN/LA841)*	Harrison	2018-19
38	LA13197SC-46	*NC09-22352/LA05102C-8-8*	Harrison	2018-19
39	LA15203-LDH112	*AGS3000 / HILLIARD*	Harrison	2018-19
40	LA15VDH-FHB-MAS10-16	*MD08-26-H2-7-12-9 / 12V51 (VA05W-251) // VA11W-95 (Hilliard "S")*	Harrison	2018-19
41	LA15VDH-FHB-MAS10-18	*MD08-26-H2-7-12-9 / 12V51 (VA05W-251) // VA11W-95 (Hilliard "S")*	Harrison	2018-19
42	LANCDH11558-109	*GA04570-10E46 / Jamestown*	Harrison	2018-19
43	13VTK434-89	*VA09W-75 / SY-Harrison // HILLIARD (VA11W-108)*	Griffey	2018-19
44	DH13SRW021-70	*Yorktown (VA08W-294) / SY_Harrison (B050154)*	Griffey	2018-19
45	VA11MAS2-68-4-1-3	*P992231A1-2-1 / SHIRLEY // IL04-8445, F9*	Griffey	2018-19
46	VA17W-74	*VA09W-45 [// VA99W-200 (VA91-54-343 / ROANE"S" (VA91-54-222)] / YORKTOWN (VA08W-294)*	Griffey	2018-19
47	VA17W-75	*VA09W-45 // VA99W-200 (VA91-54-343 / ROANE"S" (VA91-54-222)] / YORKTOWN (VA08W-294)*	Griffey	2018-19
48	VA17W-176	*AGS 2038 (GA001138-8E36) / USG 3555 (VA02W-555) // Featherstone 73 (VA09W-73)*	Griffey	2018-19
49	15VDH-FHB-MAS33-30	*MD08-26-H2-7-12-9 [SS8641// McCormick*2 / Ning7840] / USG 3118"S" (VA11W-278) // HILLIARD*	Griffey	2018-19
50	13VTK429-3	*VA08MAS-369 / Yorktown // HILLIARD (VA11W-108)*	Griffey	2018-19

Fusarium Head Blight Rating
(0 - 9)

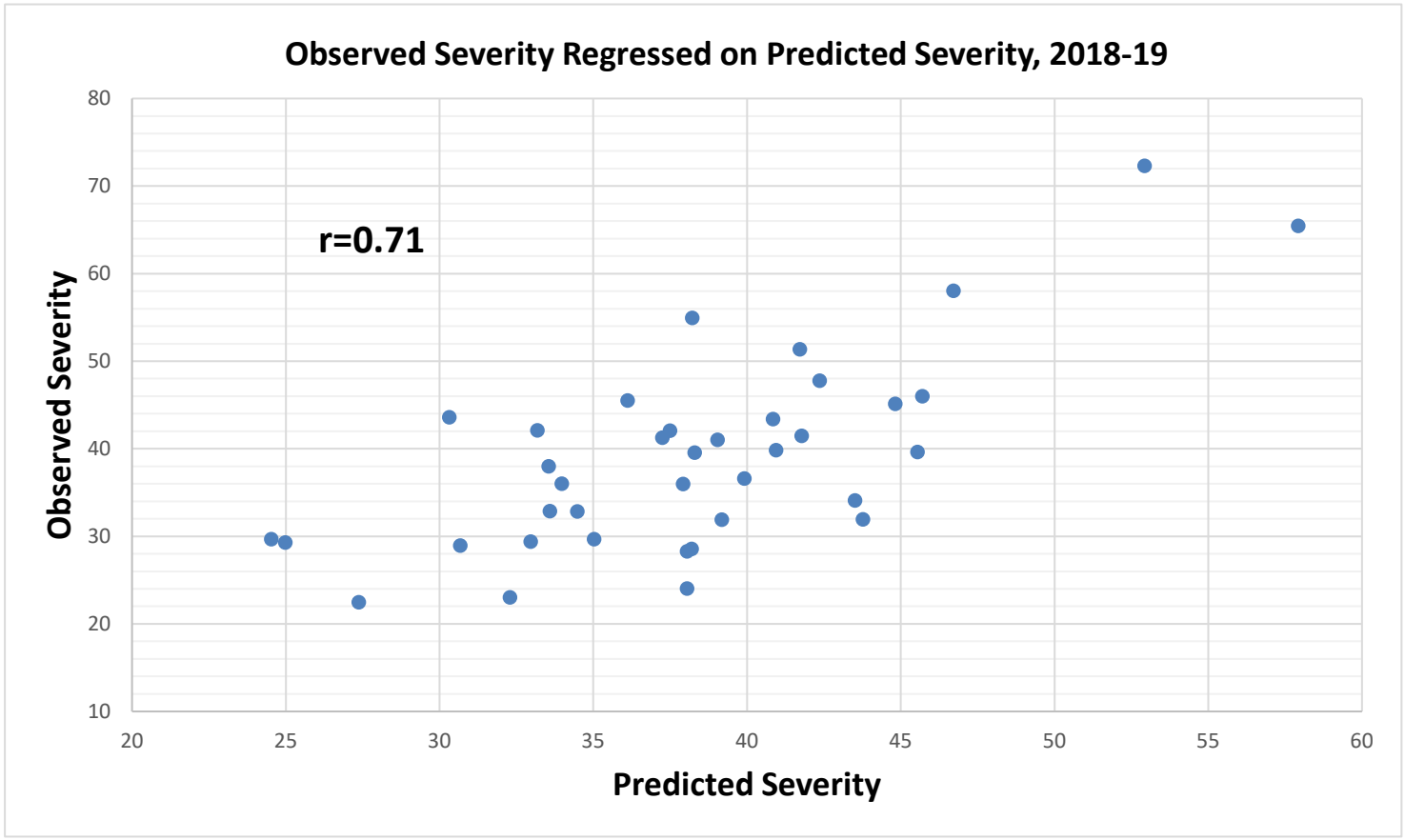
ENTRY NO	CULTIVAR/ DESIGNATION	WARSAW VA	N'PORT AR	FLOR'CE SC	KINSTON NC	W'BORO LA	LEX'TON KY	PLAINS GA	LCS IN	KWS IL	COL'BIA MO	MEAN ALL LOC.	Rank	GEBV SEVERITY
1	ERNIE	0	3	2	3	7	2	1	4	3	4	3	*4*	27
2	COKER9835	8	7	7	8	8	6	7	9	8	6	7	*48*	58
3	BESS	1	2	2	2	3	4	2	4	5	2	3	*4*	25
4	JAMESTOWN	0	4	3	4	4	4	2	2	.	3	3	*4*	31
5	SS 8641	6	9	.	8	8	7	9	7	9	7	8	*50*	53
6	AGS 2035	5	9	6	7	8	3	3	.	.	4	6	*46*	.
7	NC14-23372	2	6	2	2	4	6	3	2	3	4	3	*4*	25
8	DH13SRW023-201	1	5	3	4	5	5	4	2	6	4	4	*21*	38
9	NC11546-14	1	3	1	3	5	3	4	2		4	3	*4*	35
10	NC11331-38	1	4	1	3	4	3	6	4	6	7	4	*21*	30
11	NC15-21834	2	4	3	2	3	3	5	3	4	5	3	*4*	41
12	NC15-21835	1	4	1	3	3	4	4	3	5	4	3	*4*	39
13	NC15-21836	1	4	1	3	4	4	4	4	5	4	3	*4*	40
14	NC12164-25T	2	7	1	5	7	4	8	5	7	4	5	*37*	38
15	NC12642-81	1	3	2	2	5	3	7	3	.	3	3	*4*	34
16	NC12753-139	2	7	4	3	7	5	6	4	7	5	5	*37*	46
17	AR11289-8-1	2	3	2	3	5	5	5	3	.	4	4	*21*	46
18	ARLA09179UC-1-1	1	6	6	4	6	4	2	6	.	5	5	*37*	44
19	ARGA09485-10-1	3	5	3	5	7	5	4	4	6	3	4	*21*	41
20	AR11255-10-3	5	7	4	5	8	6	4	5	.	4	5	*37*	42
21	ARFHBDH2_72	0	3	1	4	5	3	5	3	5	4	3	*4*	42
22	ARFHBDH2_75	1	3	.	4	6	6	4	5	5	4	4	*21*	38
23	GA15VDH-FHB-MAS33-18LE46	3	8	5	7	5	4	5	4	.	4	5	*37*	36
24	GA15VDH-FHB-MAS23-18LE43F	1	3	5	3	3	5	2	1	3	2	3	*4*	38
25	GA15VDH-FHB-MAS30-18ESc43F	1	2	4	4	4	4	2	1	.	3	3	*4*	.
26	GA15VDH-FHB-MAS22-18ESc-41F	0	5	3	6	6	6	5	5	.	6	5	*37*	45
27	GA15VDH-FHB-MAS30-18EDH29F	1	2	4	5	5	3	3	2	.	4	3	*4*	38
28	GA15VDH-FHB-MAS27-18ADH33F	1	4	4	4	6	4	4	5	.	4	4	*21*	44
29	KWS202	2	3	2	3	3	4	7	7	7	4	4	*21*	.
30	KWS207	3	6	.	3	2	5	6	5	9	4	5	*37*	.
31	KWS219	0	2	1	3	2	3	4	3	4	4	2	*1*	.
32	KWS240	2	5	2	4	6	6	6	5	6	3	5	*37*	.
33	KWS242	2	5	3	4	6	3	7	6	6	4	4	*21*	.
34	LES 172093	1	2	1	3	1	4	2	2	4	3	2	*1*	.
35	LES 167851	1	3	5	3	4	4	2	7	5	3	4	*21*	.
36	LES 70022	0	3	3	2	4	2	4	6	5	5	3	*4*	.
37	LA08080C-31-1	3	5	6	6	6	7	4	8	.	6	6	*46*	42
38	LA13197SC-46	4	9	7	8	8	7	4	8	.	8	7	*48*	47
39	LA15203-LDH112	1	3	2	3	5	5	6	3	3	5	4	*21*	37
40	LA15VDH-FHB-MAS10-16	1	4	3	1	2	3	3	2	.	2	2	*1*	32
41	LA15VDH-FHB-MAS10-18	0	3	3	3	5	4	4	4	3	3	3	*4*	33
42	LANCDH11558-109	1	5	5	6	4	4	6	5	6	3	4	*21*	38
43	13VTK434-89	1	2	1	3	3	2	4	3	4	4	3	*4*	.
44	DH13SRW021-70	1	2	1	4	3	4	5	5	8	7	4	*21*	37
45	VA11MAS2-68-4-1-3	1	4	4	5	6	4	4	4	8	4	4	*21*	39
46	VA17W-74	1	4	4	5	4	4	1	4	6	4	4	*21*	34
47	VA17W-75	1	3	3	5	6	4	3	3	5	3	4	*21*	34
48	VA17W-176	2	4	6	5	4	4	3	4	5	4	4	*21*	34
49	15VDH-FHB-MAS33-30	2	7	5	6	5	4	4	8	8	3	5	*37*	33
50	13VTK429-3	3	4	2	3	4	4	5	4	4	3	3	*4*	
	Mean	2	4	3	4	5	4	4	4	5	4	4		
	LSD (0.05)	2	2	.	2	2	1.9	.	.	.	.	3		
	CV%	88.9	17.2	.	21.1	29.8	30.2	.	.	.	.	30.6		
	Correl. with SEV Prediction	0.63	0.49	0.44	0.57	0.59	0.51	0.52	0.53	0.61	0.53	0.72		

FHB Incidence (1-100)

ENTRY NO	CULTIVAR/ DESIGNATION	PLAINS GA	UIL IL	COL'BIA MO	WARSAW VA	MEAN ALL LOC.	RANK
1	ERNIE	68	68	100	10	61	1
2	COKER9835	100	96	100	100	99	50
3	BESS	78	80	100	28	71	12
4	JAMESTOWN	78	88	90	13	67	7
5	SS 8641	98	97	100	93	97	49
6	AGS 2035	85	.	100	90	92	47
7	NC14-23372	90	65	100	63	79	31
8	DH13SRW023-201	95	67	100	53	79	31
9	NC11546-14	85	.	100	30	72	14
10	NC11331-38	98	73	100	40	78	29
11	NC15-21834	93	60	100	48	75	22
12	NC15-21835	90	88	100	33	78	29
13	NC15-21836	88	73	100	43	76	27
14	NC12164-25T	95	90	100	50	84	39
15	NC12642-81	98	68	100	28	73	16
16	NC12753-139	100	95	100	50	86	42
17	AR11289-8-1	88	.	100	50	79	31
18	ARLA09179UC-1-1	85	.	100	35	73	16
19	ARGA09485-10-1	90	.	100	63	84	39
20	AR11255-10-3	90	94	100	90	94	48
21	ARFHBDH2_72	85	72	100	13	67	7
22	ARFHBDH2_75	93	60	100	25	69	11
23	GA15VDH-FHB-MAS33-18LE46	83	.	100	58	80	36
24	GA15VDH-FHB-MAS23-18LE43F	83	38	90	38	62	3
25	GA15VDH-FHB-MAS30-18ESc43F	85	75	100	28	72	14
26	GA15VDH-FHB-MAS22-18ESc-41F	93	91	100	15	75	22
27	GA15VDH-FHB-MAS30-18EDH29F	98	73	100	28	75	22
28	GA15VDH-FHB-MAS27-18ADH33F	95	70	100	40	76	27
29	KWS202	93	90	90	50	81	37
30	KWS207	98	83	100	65	86	42
31	KWS219	88	65	100	18	68	9
32	KWS240	93	93	100	50	84	39
33	KWS242	93	88	100	48	82	38
34	LES 172093	80	62	100	40	71	12
35	LES 167851	80	53	100	40	68	9
36	LES 70022	80	57	100	15	63	4
37	LA08080C-31-1	93	96	100	70	90	45
38	LA13197SC-46	85	95	100	83	91	46
39	LA15203-LDH112	93	75	100	48	79	31
40	LA15VDH-FHB-MAS10-16	88	45	80	30	61	1
41	LA15VDH-FHB-MAS10-18	85	70	100	10	66	6
42	LANCDH11558-109	95	57	100	40	73	16
43	13VTK434-89	80	82	100	30	73	16
44	DH13SRW021-70	98	63	100	35	74	21
45	VA11MAS2-68-4-1-3	100	88	100	28	79	31
46	VA17W-74	63	68	100	25	64	5
47	VA17W-75	93	73	100	28	73	16
48	VA17W-176	83	73	100	43	75	22
49	15VDH-FHB-MAS33-30	88	88	90	33	75	22
50	13VTK429-3	93	85	100	65	86	42
	Mean	89	76	99	43	77	
	LSD (0.05)	.	24	.	32	24	
	CV%	.	23.4	.	53.7	16.1	

FHB Severity (1-100)

	CULTIVAR/ DESIGNATION	PLAINS GA	URBANA IL	COL'BIA MO	WARSAW VA	MEAN ALL LOC.	Rank	GEBV
1	ERNIE	16	32	26	17	22	*1*	27
2	COKER9835	55	70	55	83	65	*49*	58
3	BESS	23	45	21	30	30	*13*	25
4	JAMESTOWN	25	32	22	36	29	*8*	31
5	SS 8641	75	87	60	66	72	*50*	53
6	AGS 2035	29	.	36	67	44	*36*	
7	NC14-23372	30	19	42	27	29	*8*	25
8	DH13SRW023-201	36	17	29	30	28	*6*	38
9	NC11546-14	38	.	31	18	30	*13*	35
10	NC11331-38	51	37	61	26	44	*36*	30
11	NC15-21834	41	37	43	53	43	*35*	41
12	NC15-21835	40	46	33	46	41	*30*	39
13	NC15-21836	37	48	28	34	37	*24*	40
14	NC12164-25T	65	62	38	54	55	*47*	38
15	NC12642-81	55	35	22	33	36	*20*	34
16	NC12753-139	50	49	43	43	46	*41*	46
17	AR11289-8-1	46	.	33	38	40	*27*	46
18	ARLA09179UC-1-1	22	.	38	41	34	*19*	44
19	ARGA09485-10-1	38	.	28	52	40	*27*	41
20	AR11255-10-3	34	81	33	58	51	*45*	42
21	ARFHBDH2_72	43	54	30	38	41	*30*	42
22	ARFHBDH2_75	37	27	37	44	36	*20*	38
23	GA15VDH-FHB-MAS33-18LE46	46	.	33	55	45	*38*	36
24	GA15VDH-FHB-MAS23-18LE43F	22	30	22	22	24	*3*	38
25	GA15VDH-FHB-MAS30-18ESc43F	21	22	35	26	26	*4*	
26	GA15VDH-FHB-MAS22-18ESc-41F	42	44	61	34	45	*38*	45
27	GA15VDH-FHB-MAS30-18EDH29F	27	26	36	25	29	*8*	38
28	GA15VDH-FHB-MAS27-18ADH33F	32	29	36	32	32	*15*	44
29	KWS202	61	53	43	50	52	*46*	
30	KWS207	51	45	40	43	45	*38*	
31	KWS219	36	16	36	24	28	*6*	
32	KWS240	53	58	30	46	47	*42*	
33	KWS242	63	60	34	39	49	*44*	
34	LES 172093	22	29	33	34	29	*8*	
35	LES 167851	26	24	25	32	27	*5*	
36	LES 70022	39	34	41	29	36	*20*	
37	LA08080C-31-1	39	61	49	42	48	*43*	42
38	LA13197SC-46	34	70	75	54	58	*48*	47
39	LA15203-LDH112	54	29	47	35	41	*30*	37
40	LA15VDH-FHB-MAS10-16	25	31	16	21	23	*2*	32
41	LA15VDH-FHB-MAS10-18	36	32	24	26	29	*8*	33
42	LANCDH11558-109	55	34	31	38	40	*27*	38
43	13VTK434-89	39	40	44	33	39	*26*	
44	DH13SRW021-70	39	29	68	32	42	*33*	37
45	VA11MAS2-68-4-1-3	30	31	34	33	32	*15*	39
46	VA17W-74	18	39	43	32	33	*17*	34
47	VA17W-75	28	31	30	43	33	*17*	34
48	VA17W-176	27	37	35	54	38	*25*	34
49	15VDH-FHB-MAS33-30	40	48	21	60	42	*33*	33
50	13VTK429-3	42	35	25	42	36	*20*	
	Mean	39	41	37	39	39		
	LSD (0.05)	.	15	.	21	21		
	CV%	.	27.0	.	39.1	26.9		
	Correlations with Predictions	0.49	0.62	0.48	0.61	0.71		

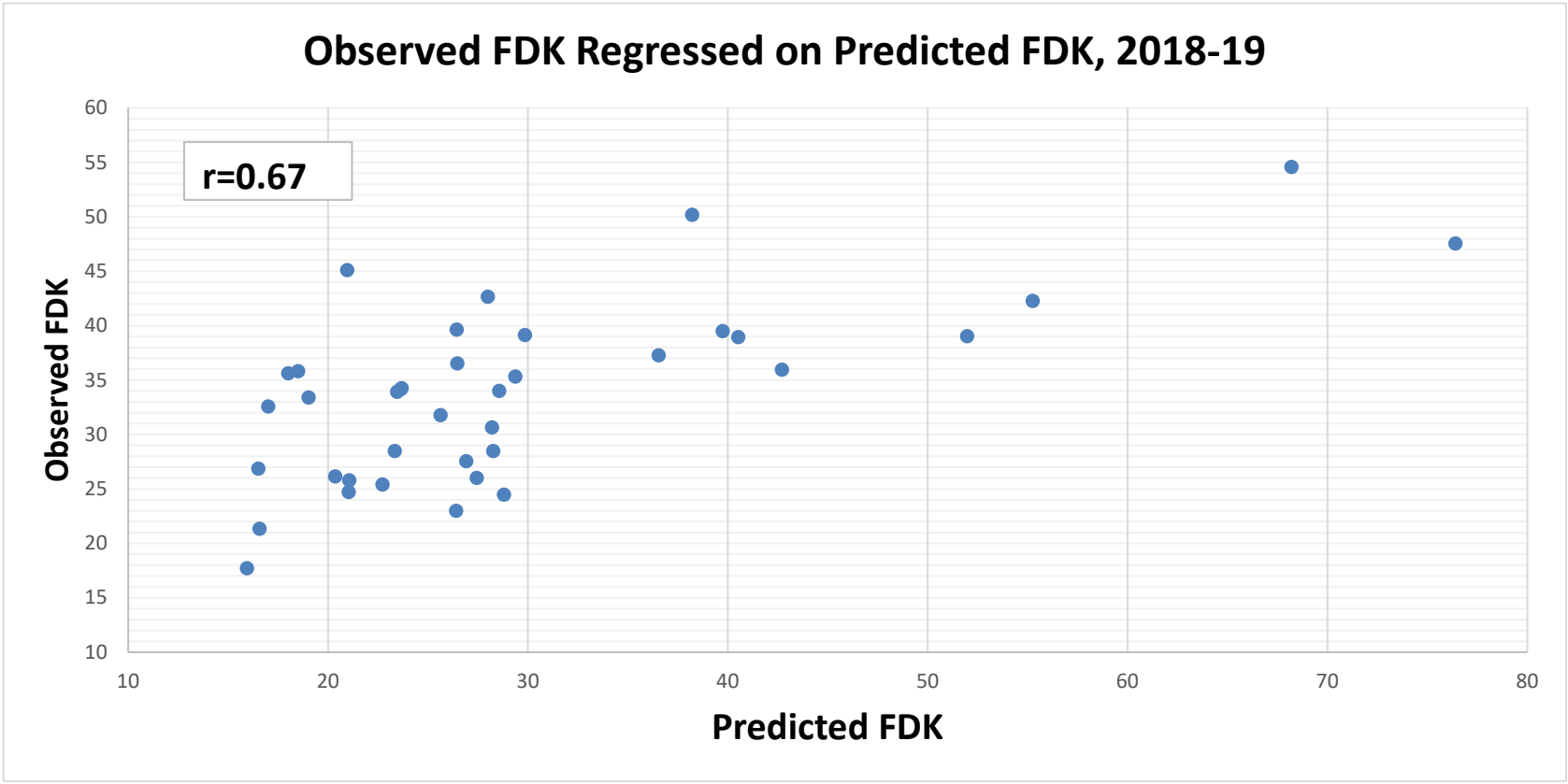

Observed Severity Regressed on Predicted Severity, 2018-19
r=0.71
Observed Severity
Predicted Severity
80
70
60
50
40
30
20
10
20
25
30
35
40
45
50
55
60

FHB Index (1-100)

	CULTIVAR/ DESIGNATION	UIL IL	PLAINS GA	COL'BIA MO	WARSAW VA	MEAN ALL LOC.	RANK
1	ERNIE	24	10	26	2	15	3
2	COKER9835	67	55	55	83	65	49
3	BESS	36	18	21	8	21	8
4	JAMESTOWN	28	20	20	5	18	4
5	SS 8641	85	74	60	62	70	50
6	AGS 2035	.	24	36	60	41	42
7	NC14-23372	12	27	42	17	24	18
8	DH13SRW023-201	12	34	29	16	23	13
9	NC11546-14	.	32	31	6	24	15
10	NC11331-38	28	49	61	10	37	38
11	NC15-21834	22	38	43	25	32	31
12	NC15-21835	40	36	33	15	31	29
13	NC15-21836	36	32	28	14	28	24
14	NC12164-25T	56	62	38	27	46	46
15	NC12642-81	24	53	22	9	27	22
16	NC12753-139	47	50	43	21	40	41
17	AR11289-8-1	.	40	33	21	32	31
18	ARLA09179UC-1-1	.	18	38	14	24	15
19	ARGA09485-10-1	.	34	28	33	32	31
20	AR11255-10-3	76	30	33	52	48	47
21	ARFHBDH2_72	39	37	30	5	28	24
22	ARFHBDH2_75	17	34	37	11	24	18
23	GA15VDH-FHB-MAS33-18LE46	.	38	33	32	35	36
24	GA15VDH-FHB-MAS23-18LE43F	11	18	20	8	14	1
25	GA15VDH-FHB-MAS30-18ESc43F	17	17	35	7	19	6
26	GA15VDH-FHB-MAS22-18ESc-41F	41	38	61	5	36	37
27	GA15VDH-FHB-MAS30-18EDH29F	20	27	36	7	22	11
28	GA15VDH-FHB-MAS27-18ADH33F	20	30	36	13	25	20
29	KWS202	48	56	39	25	42	44
30	KWS207	37	50	40	28	39	39
31	KWS219	10	32	36	4	21	8
32	KWS240	54	49	30	24	39	39
33	KWS242	53	59	34	18	41	42
34	LES 172093	18	18	33	14	21	8
35	LES 167851	14	20	25	13	18	4
36	LES 70022	20	31	41	4	24	15
37	LA08080C-31-1	59	36	49	29	43	45
38	LA13197SC-46	66	29	75	44	53	48
39	LA15203-LDH112	24	50	47	16	34	34
40	LA15VDH-FHB-MAS10-16	15	22	12	6	14	1
41	LA15VDH-FHB-MAS10-18	23	31	24	3	20	7
42	LANCDH11558-109	22	52	31	15	30	28
43	13VTK434-89	33	31	44	9	29	26
44	DH13SRW021-70	18	38	68	12	34	34
45	VA11MAS2-68-4-1-3	28	30	34	9	25	20
46	VA17W-74	25	11	43	8	22	11
47	VA17W-75	23	26	30	12	23	13
48	VA17W-176	27	22	35	24	27	22
49	15VDH-FHB-MAS33-30	42	35	19	20	29	26
50	13VTK429-3	31	39	25	29	31	29
	Mean	33	35	36	25	31	
	LSD (0.05)	15	.	.	15	22	
	CV%	33.3	.	.	42.4	36.7	

Percent Fusarium Damaged Kernels

	CULTIVAR/ DESIGNATION	FLOR'CE SC	KINSTON NC	PLAINS GA	W.BORO LA	KWS IL	N'PORT AR	F'VILLE AR	UIL IL	WARSAW VA	LEX'TON KY	MEAN ALL LOC.	Rank	GEBV
1	ERNIE	5	8	22	13	4	33	2	65	7	8	17	*4*	21
2	COKER9835	50	83	82	60	90	85	50	95	63	25	68	*49*	55
3	BESS	8	10	11	23	13	28	3	47	10	8	16	*2*	18
4	JAMESTOWN	5	12	18	20	.	38	6	68	13	5	21	*14*	25
5	SS 8641	.	60	60	80	98	98	73	100	94	40	76	*50*	48
6	AGS 2035	15	43	30	45	.	80	55	.	53	25	49	*46*	.
7	NC14-23372	10	18	11	35	33	55	16	60	15	13	26	*22*	23
8	DH13SRW023-201	20	28	7	33	40	25	8	75	24	15	27	*26*	26
9	NC11546-14	13	25	5	35	.	33	7	.	17	10	23	*17*	34
10	NC11331-38	5	15	26	40	28	47	12	83	20	8	28	*29*	28
11	NC15-21834	8	8	15	40	23	28	6	65	33	13	24	*20*	34
12	NC15-21835	8	20	17	40	43	33	7	52	28	10	26	*22*	32
13	NC15-21836	13	15	9	45	58	28	5	85	23	5	29	*33*	34
14	NC12164-25T	15	38	19	73	75	45	12	87	23	13	40	*42*	40
15	NC12642-81	10	8	5	35	.	35	2	45	14	5	18	*8*	36
16	NC12753-139	18	33	14	55	50	57	12	98	32	15	38	*41*	50
17	AR11289-8-1	5	20	4	45	.	27	8	.	10	5	21	*14*	45
18	ARLA09179UC-1-1	20	25	12	38	.	35	10	29	25	13	23	*17*	28
19	ARGA09485-10-1	18	48	18	33	70	48	18	.	53	20	41	*43*	39
20	AR11255-10-3	13	52	9	60	.	53	37	89	53	15	43	*44*	36
21	ARFHBDH2_72	5	28	21	55	23	40	4	58	24	8	26	*22*	37
22	ARFHBDH2_75	.	30	24	38	40	32	12	63	20	10	28	*29*	31
23	GA15VDH-FHB-MAS33-18LE46	20	22	16	50	.	57	18	91	29	23	37	*40*	37
24	GA15VDH-FHB-MAS23-18LE43F	8	10	8	20	18	33	6	38	12	13	17	*4*	27
25	GA15VDH-FHB-MAS30-18ESc43F	25	30	12	53	.	27	7	67	14	10	27	*26*	.
26	GA15VDH-FHB-MAS22-18ESc-41F	10	18	15	30	.	35	37	90	11	20	30	*37*	39
27	GA15VDH-FHB-MAS30-18EDH29F	10	23	22	18	.	30	17	60	20	10	24	*20*	34
28	GA15VDH-FHB-MAS27-18ADH33F	15	15	18	35	.	43	18	72	19	13	28	*29*	43
29	KWS202	10	33	11	48	20	53	10	63	40	5	29	*33*	.
30	KWS207	.	65	23	45	55	60	18	90	26	28	44	*45*	.
31	KWS219	5	23	5	25	8	25	7	42	13	5	16	*2*	.
32	KWS240	13	45	22	40	20	45	13	85	43	13	34	*39*	.
33	KWS242	10	30	22	40	18	43	15	92	32	18	32	*38*	.
34	LES 172093	5	20	3	25	8	22	3	63	19	5	17	*4*	.
35	LES 167851	20	20	18	23	13	23	5	47	20	5	19	*10*	.
36	LES 70022	8	8	11	40	5	23	2	38	11	5	15	*1*	.
37	LA08080C-31-1	30	67	26	58	.	45	48	100	58	28	52	*47*	39
38	LA13197SC-46	45	62	37	45	.	77	58	97	48	25	55	*48*	42
39	LA15203-LDH112	10	43	8	35	28	27	5	73	29	8	26	*22*	40
40	LA15VDH-FHB-MAS10-16	18	28	7	25	.	18	5	35	7	8	17	*4*	33
41	LA15VDH-FHB-MAS10-18	10	5	14	35	13	25	6	57	9	18	19	*10*	33
42	LANCDH11558-109	20	32	18	28	38	32	6	55	26	15	27	*26*	28
43	13VTK434-89	0	20	17	38	13	22	3	57	15	8	19	*10*	.
44	DH13SRW021-70	10	23	19	30	13	23	3	48	11	5	18	*8*	36
45	VA11MAS2-68-4-1-3	13	20	14	35	43	57	17	73	18	5	29	*33*	35
46	VA17W-74	20	10	6	28	23	25	3	68	23	5	21	*14*	26
47	VA17W-75	8	13	19	18	23	20	4	72	21	8	20	*13*	26
48	VA17W-176	18	15	17	35	38	27	18	90	24	8	29	*33*	24
49	15VDH-FHB-MAS33-30	10	27	11	15	10	42	17	68	18	10	23	*17*	25
50	13VTK429-3	10	15	15	45	38	32	17	67	33	8	28	*29*	.
	Mean	14	27	17	38	32	39	15	69	26	12	29		
	LSD (0.05)	.	22	.	24	.	12	11	22	24	15	19.40		
	CV%	.	43.6	.	36.7	.	10.6	26.6	24.0	67.0	60.5	34.4		
	Correlations with Predictions	0.48	0.63	0.50	0.68	0.72	0.57	0.55	0.54	0.56	0.52	0.67		

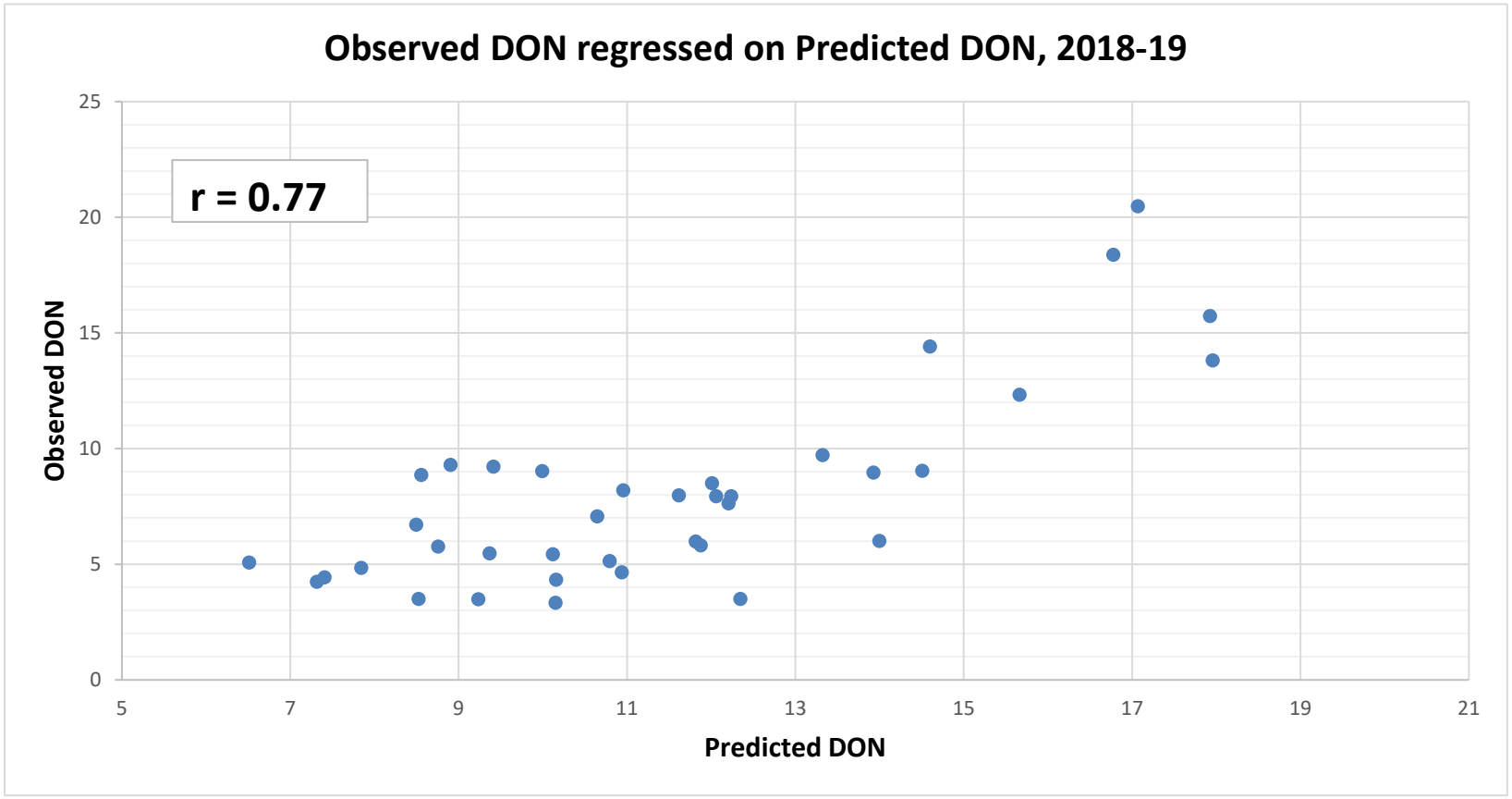

Observed FDK Regressed on Predicted FDK, 2018-19
r=0.67
Observed FDK
Predicted FDK
60
55
50
45
40
35
30
25
20
15
10
10
20
30
40
50
60
70
80

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

	CULTIVAR/ DESIGNATION	UIL IL	WARSAW VA	PLAINS GA	MEAN ALL LOC.	Rank
1	ERNIE	56	8	34	*33*	*5*
2	COKER9835	88	55	79	*74*	*50*
3	BESS	56	17	35	*36*	*10*
4	JAMESTOWN	60	15	38	*38*	*14*
5	SS 8641	96	48	76	*73*	*49*
6	AGS 2035	.	47	46	*56*	*44*
7	NC14-23372	49	27	40	*39*	*15*
8	DH13SRW023-201	55	25	42	*41*	*20*
9	NC11546-14	.	15	39	*36*	*10*
10	NC11331-38	66	20	55	*47*	*35*
11	NC15-21834	55	30	46	*44*	*29*
12	NC15-21835	61	24	46	*43*	*26*
13	NC15-21836	70	23	41	*45*	*31*
14	NC12164-25T	83	31	56	*57*	*45*
15	NC12642-81	46	18	48	*37*	*13*
16	NC12753-139	83	28	51	*54*	*40*
17	AR11289-8-1	.	26	42	*43*	*26*
18	ARLA09179UC-1-1	.	23	37	*39*	*15*
19	ARGA09485-10-1	.	34	46	*49*	*37*
20	AR11255-10-3	88	45	41	*58*	*47*
21	ARFHBDH2_72	61	15	47	*41*	*20*
22	ARFHBDH2_75	54	21	48	*41*	*20*
23	GA15VDH-FHB-MAS33-18LE46	.	34	45	*49*	*37*
24	GA15VDH-FHB-MAS23-18LE43F	36	18	35	*29*	*1*
25	GA15VDH-FHB-MAS30-18ESc43F	56	16	36	*36*	*10*
26	GA15VDH-FHB-MAS22-18ESc-41I	76	15	46	*46*	*32*
27	GA15VDH-FHB-MAS30-18EDH29I	54	16	46	*39*	*15*
28	GA15VDH-FHB-MAS27-18ADH33I	58	22	45	*42*	*23*
29	KWS202	68	30	50	*50*	*39*
30	KWS207	75	32	54	*54*	*40*
31	KWS219	41	13	39	*31*	*3*
32	KWS240	79	29	52	*54*	*40*
33	KWS242	81	26	56	*54*	*40*
34	LES 172093	52	22	32	*35*	*8*
35	LES 167851	42	22	39	*34*	*6*
36	LES 70022	43	13	40	*32*	*4*
37	LA08080C-31-1	89	34	50	*57*	*45*
38	LA13197SC-46	86	41	51	*59*	*48*
39	LA15203-LDH112	61	25	47	*44*	*29*
40	LA15VDH-FHB-MAS10-16	37	15	36	*29*	*1*
41	LA15VDH-FHB-MAS10-18	53	11	42	*35*	*8*
42	LANCDH11558-109	49	24	52	*42*	*23*
43	13VTK434-89	59	19	43	*40*	*19*
44	DH13SRW021-70	47	20	49	*39*	*15*
45	VA11MAS2-68-4-1-3	65	18	45	*43*	*26*
46	VA17W-74	59	17	27	*34*	*6*
47	VA17W-75	60	21	44	*42*	*23*
48	VA17W-176	69	29	40	*46*	*32*
49	15VDH-FHB-MAS33-30	68	28	43	*46*	*32*
50	13VTK429-3	63	32	46	*47*	*35*
	Mean	63	25	45	43	
	LSD (0.05)	13	15	.	14	
	CV%	16.0	42.4	.	16.6	

DON
(ppm)

	CULTIVAR/ DESIGNATION	K'TON NC	W'SAW VA	N'PORT AR	F'VILLE AR	W'BORO LA	LEX'TON KY	KWS IL	UIL IL	MEAN ALL LOC.	RANK	GEBV
1	ERNIE	4	2	13	1	3	1	2	16	5	*8*	10
2	COKER9835	40	22	28	6	10	3	16	18	16	*47*	18
3	BESS	3	3	10	2	8	0	4	13	5	*8*	9
4	JAMESTOWN	2	3	8	1	2	1	7	11	4	*4*	7
5	SS 8641	18	22	54	16	11	6	21	45	20	*50*	17
6	AGS 2035	15	35	36	15	5	1	.	12	16	*47*	
7	NC14-23372	4	5	28	6	6	2	5	18	9	*35*	10
8	DH13SRW023-201	10	5	19	3	6	2	10	18	9	*35*	9
9	NC11546-14	5	2	14	2	6	0	4	.	6	*17*	9
10	NC11331-38	6	5	20	4	14	1	4	20	9	*35*	9
11	NC15-21834	3	8	15	2	15	1	5	15	8	*28*	12
12	NC15-21835	7	5	16	2	16	1	5	15	8	*28*	12
13	NC15-21836	6	5	12	1	14	1	7	20	8	*28*	11
14	NC12164-25T	9	8	17	3	14	1	6	13	9	*35*	9
15	NC12642-81	3	2	10	1	8	1	1	8	4	*4*	7
16	NC12753-139	12	6	24	3	12	2	6	14	10	*41*	13
17	AR11289-8-1	10	7	14	4	15	1	4	.	9	*35*	14
18	ARLA09179UC-1-1	7	4	14	3	8	2	9	.	8	*28*	12
19	ARGA09485-10-1	16	15	22	5	7	4	11	.	12	*43*	16
20	AR11255-10-3	6	13	31	12	15	2	11	.	14	*44*	18
21	ARFHBDH2_72	3	2	5	1	8	0	2	7	3	*1*	9
22	ARFHBDH2_75	9	4	13	4	7	1	3	13	7	*23*	8
23	GA15VDH-FHB-MAS33-18LE46	3	6	14	3	3	2	5	14	6	*17*	12
24	GA15VDH-FHB-MAS23-18LE43F	3	3	14	3	3	1	2	11	5	*8*	7
25	GA15VDH-FHB-MAS30-18ESc43F	4	4	9	2	3	1	6	11	5	*8*	
26	GA15VDH-FHB-MAS22-18ESc-41F	2	2	7	2	1	1	6	7	4	*4*	12
27	GA15VDH-FHB-MAS30-18EDH29F	3	3	8	2	1	0	5	13	4	*4*	10
28	GA15VDH-FHB-MAS27-18ADH33F	8	5	19	5	5	1	9	12	8	*28*	12
29	KWS202	6	9	10	3	16	1	2	12	7	*23*	
30	KWS207	16	8	29	4	23	2	8	18	14	*44*	
31	KWS219	8	3	9	1	12	1	3	9	6	*17*	
32	KWS240	12	8	26	3	14	2	6	13	10	*41*	
33	KWS242	9	4	14	2	10	1	5	9	7	*23*	
34	LES 172093	6	4	11	1	10	1	3	11	6	*17*	
35	LES 167851	7	3	11	2	11	1	6	13	7	*23*	
36	LES 70022	2	2	7	1	11	0	4	13	5	*8*	
37	LA08080C-31-1	14	10	23	5	7	3	20	33	14	*44*	15
38	LA13197SC-46	24	14	35	15	3	5	15	35	18	*49*	17
39	LA15203-LDH112	13	7	12	2	14	2	4	19	9	*35*	15
40	LA15VDH-FHB-MAS10-16	1	2	8	1	1	1	3	11	3	*1*	9
41	LA15VDH-FHB-MAS10-18	1	3	7	1	1	1	2	11	3	*1*	10
42	LANCDH11558-109	2	5	12	1	3	2	8	14	6	*17*	12
43	13VTK434-89	5	3	10	1	14	1	2	8	5	*8*	
44	DH13SRW021-70	8	5	10	1	10	1	2	11	6	*17*	14
45	VA11MAS2-68-4-1-3	3	7	16	2	5	1	6	21	8	*28*	12
46	VA17W-74	1	3	12	2	3	1	3	12	5	*8*	11
47	VA17W-75	4	4	9	1	2	1	6	14	5	*8*	11
48	VA17W-176	7	5	13	5	5	1	6	15	7	*23*	11
49	15VDH-FHB-MAS33-30	4	3	12	4	2	1	2	11	5	*8*	8
50	13VTK429-3	8	7	19	4	8	2	2	17	8	*28*	
	Mean	8	7	16	4	8	1	6	14	8		
	LSD (0.05)	7	9	7	5	6	.	.	.	8		
	CV%	48.9	97.3	14.8	46.9	41.5	.	.	27.3	50.7		
	Correlations with Predictions	0.68	0.79	0.64	0.64	0.34	.	0.70	0.64	0.77		


Observed DON regressed on Predicted DON, 2018-19
r = 0.77
Observed DON
Predicted DON
0
5
10
15
20
25
5
7
9
11
13
15
17
19
21

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

	DESIGNATION	Rht-B1	Rht-D1	Fhb1	Fhb Massey 3BL	Fhb 5A Ernie	Fhb 5A Ning	Fhb 2DL Wuhan 1/W14	Fhb_1B_Jamestown	Fhb_1A_Neuse	Fhb_4A_Neuse	Fhb_6A_Neuse	Fhb_2B_Bess	Fhb_3B_Bess	H13
1	ERNIE	Rht1	no	no	F3BM	F5AE	no	no	no	F1AN	F4AN	F6AN	no	het	no
2	COKER9835	no	Rht2	no	no	no	no	no	no	no	F4AN	no	no	no	no
3	BESS	Rht1	no	no	no	no	no	no	no	F1AN	no	het	F2BB	F3BB	no
4	JAMESTOWN	no	Rht2	no	no	no	no	no	F1BJ	F1AN	no	no	no	no	no
5	SS 8641	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	no
6	AGS 2035	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	NC14-23372	no	Rht2	Fhb1	no	F5AE	no	no	F1BJ	F1AN	no	F6AN	no	no	no
8	DH13SRW023-201	no	Rht2	no	no	no	no	no	F1BJ	F1AN	no	no	no	no	no
9	NC11546-14	Rht1	no	het	no	no	no	no	F1BJ	F1AN	no	no	no	no	H13
10	NC11331-38	no	Rht2	no	no	no	no	no	F1BJ	F1AN	het	F6AN	no	no	het
11	NC15-21834	no	Rht2	no	no	no	no	no	no	het	no	no	no	no	no
12	NC15-21835	no	Rht2	no	no	no	no	no	no	F1AN	no	no	no	no	no
13	NC15-21836	no	Rht2	no	no	no	no	no	no	F1AN	no	no	no	no	no
14	NC12164-25T	no	Rht2	Fhb1	no	no	no	no	no	no	no	no	no	no	no
15	NC12642-81	Rht1	no	Fhb1	no	no	no	no	het	F1AN	no	het	no	no	H13
16	NC12753-139	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	no
17	AR11289-8-1	no	no	no	no	no	no	no	no	no	F4AN	no	no	no	no
18	ARLA09179UC-1-1	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	no
19	ARGA09485-10-1	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	no
20	AR11255-10-3	no	Rht2	no	no	no	no	no	no	no	F4AN	no	no	no	no
21	ARFHBDH2_72	no	Rht2	no	no	no	no	2DL	F1BJ	F1AN	no	no	no	no	no
22	ARFHBDH2_75	no	Rht2	no	no	no	F5ANg	no	no	het	het	no	no	no	het
23	GA15VDH-FHB-MAS33-18LE46	no	Rht2	no	F3BM	no	no	no	F1BJ	no	no	no	no	no	no
24	GA15VDH-FHB-MAS23-18LE43F	no	Rht2	Fhb1	no	no	F5ANg	no	no	no	no	no	no	no	no
25	GA15VDH-FHB-MAS30-18ESc43F	no	Rht2	Fhb1	no	no	no	no	no	no	no	no	no	no	no
26	GA15VDH-FHB-MAS22-18ESc-41F	no	Rht2	het	no	no	no	no	no	no	no	no	no	no	H13
27	GA15VDH-FHB-MAS30-18EDH29F	no	Rht2	Fhb1	no	no	no	no	no	no	no	no	no	no	no
28	GA15VDH-FHB-MAS27-18ADH33F	no	Rht2	het	het	no	F5ANg	2DL	no	het	het	no	no	no	no
29	KWS202	Rht1	no	no	no	no	no	no	no	F1AN	no	F6AN	no	no	no
30	KWS207	Rht1	no	no	no	no	no	no	no	no	no	no	no	no	no
31	KWS219	Rht1	no	no	F3BM	no	no	no	no	F1AN	no	no	no	no	no
32	KWS240	no	Rht2	no	no	no	no	no	F1BJ	no	no	no	no	no	no
33	KWS242	no	Rht2	no	no	no	no	no	no	no	no	no	no	no	het
34	LES 172093	Rht1	no	no	no	no	no	no	F1BJ	F1AN	no	F6AN	no	F3BB	no
35	LES 167851	Rht1	no	no	no	no	no	no	no	het	no	no	no	no	no
36	LES 70022	Rht1	no	no	no	no	no	no	no	F1AN	het	het	no	no	no
37	LA08080C-31-1	no	Rht2	no	no	no	no	no	F1BJ	het	no	no	no	no	H13
38	LA13197SC-46	no	Rht2	no	no	no	no	no	no	F1AN	F4AN	no	no	no	no
39	LA15203-LDH112	no	Rht2	no	no	no	no	no	het	F1AN	no	no	no	no	no
40	LA15VDH-FHB-MAS10-16	no	Rht2	Fhb1	no	no	F5ANg	no	F1BJ	no	no	no	no	no	no
41	LA15VDH-FHB-MAS10-18	no	Rht2	Fhb1	no	no	no	no	no	no	no	no	no	no	no
42	LANCDH11558-109	no	Rht2	no	no	no	no	no	no	het	no	no	no	no	no
43	13VTK434-89	no	Rht2	no	no	no	no	no	het	no	no	no	no	no	no
44	DH13SRW021-70	no	Rht2	no	no	no	no	no	no	no	F4AN	no	no	no	no
45	VA11MAS2-68-4-1-3	Rht1	no	no	no	no	no	no	no	het	het	no	no	het	het
46	VA17W-74	no	Rht2	no	no	no	no	no	no	F1AN	no	F6AN	no	no	no
47	VA17W-75	no	Rht2	no	no	no	no	no	no	F1AN	no	F6AN	het	no	no
48	VA17W-176	no	Rht2	no	no	no	no	no	no	no	F4AN	no	no	no	no
49	15VDH-FHB-MAS33-30	no	Rht2	Fhb1	F3BM	no	no	2DL	F1BJ	no	no	no	no	no	no
50	13VTK429-3	no	Rht2	no	no	no	no	no	F1BJ	F1AN	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 2013-2019 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 2018 and 2019 nurseries only

QTL†	Allele‡	n§	INC		SEV		FDK		DON		RAT	
Qfhb.nc-2B.1 (Bess)	S	281	57.8	p = 0.287	32.7	p = 0.096	30.6	p = 0.021	9.9	p < 0.001	4.2	p = 0.021
	R	36	56.2	-1.6	30.9	-1.1	27.9	-2.7	8.0	-1.9	3.7	-0.5
Qfhb.nc-3B.2 (Bess)	S	307	57.9	p = 0.001	32.6	p < 0.001	30.7	p < 0.001	9.7	p = 0.289	4.2	p < 0.001
	R	14	52.4	-5.5	26.2	-6.4	24.1	-6.6	9.2	-0.5	3.2	-1.0
Ning_5A	S	313	57.8	p = 0.019	32.7	p = 0.001	30.5	p < 0.001	9.8	p < 0.001	4.2	p = 0.001
	R	11	52.8	-5.0	27.1	-5.60	22.6	-7.9	5.5	-4.3	3.5	-0.7
Ernie_5A	S	302	57.4	p = 0.001	32.2	p < 0.001	29.7	p < 0.001	9.5	p = 0.001	4.2	p = 0.001
	R	20	61.9	4.5	36.4	4.2	37.4	7.7	11.2	1.7	3.6	-0.6
Wuhan-1_2DL	S	312	57.8	p = 0.367	32.7	p = 0.003	30.5	p < 0.001	9.7	p < 0.001	4.2	p = 0.019
	R	11	55.9	-1.9	27.8	-4.9	22.6	-7.9	5.4	-4.3	3.8	-0.4
Sumai 3_Fhb1	S	279	58.0	p = 0.180	33.3	p < 0.001	31.0	p < 0.001	10.2	p < 0.001	4.3	p < 0.001
	R	39	56.4	-1.6	28.3	-5.0	26.0	-5	6.5	-3.7	3.5	-0.8
QTL_3BL (Massey)	S	296	58.0	p = 0.159	32.7	p = 0.378	30.3	p = 0.378	9.7	p = 0.046	4.20	p = 0.286
	R	22	56.1	-1.9	31.7	-1	31.3	1	8.8	-0.9	4.00	-0.2
QTL_1A (Neuse)	S	148	58.6	p=0.0380	33.8	p<0.001	31.9	p<0.001	10.5	p<0.001	4.4	p<0.001
	R	150	57.1	-1.5	31.4	-2.4	28.6	-3.3	8.9	-1.6	3.9	-0.5
QTL_4A (Neuse)	S	151	55.3	p = 0.189	31.5	p = 0.553	28.8	p = 0.065	9.9	p=0.226	4.1	p=0.001
	R	117	56.8	1.5	32.0	0.5	30.3	1.5	10.3	0.4	4.5	0.4
QTL_6A (Neuse)	S	206	57.7	p = 0.792	32.5	p = 0.942	30.7	p = 0.495	10.3	p < 0.001	4.3	p < 0.001
	R	101	58.1	0.4	32.6	0.1	29.9	-0.8	8.4	-1.9	3.5	-0.8
QTL_1B (Jamestown)	S	137	57.6	p = 0.026	33.0	p<0.0011	31.2	p = 0.002	10.7	p < 0.001	4.3	p = 0.002
	R	73	55.5	-2.1	29.2	-3.8	28.6	-2.6	8.3	-2.4	4.0	-0.3

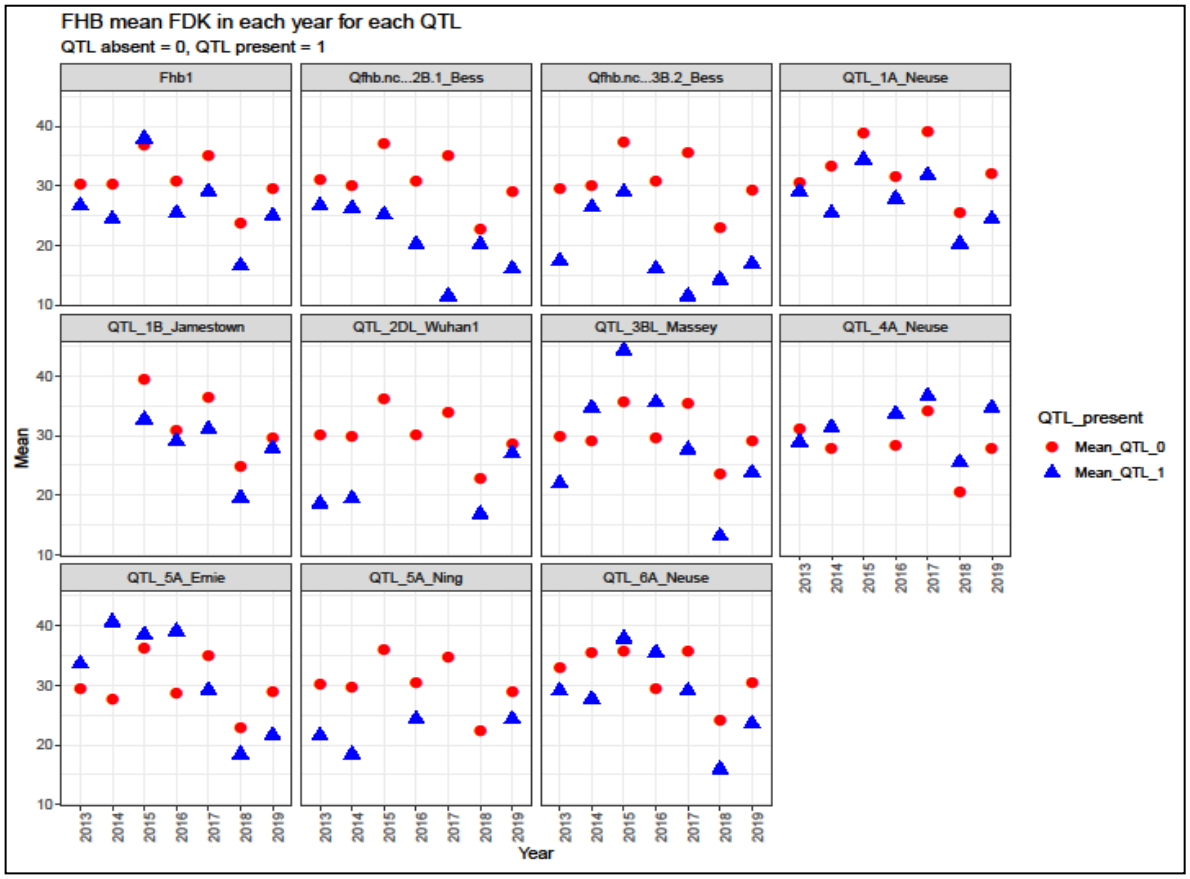
† QTL, quantitative trait loci.

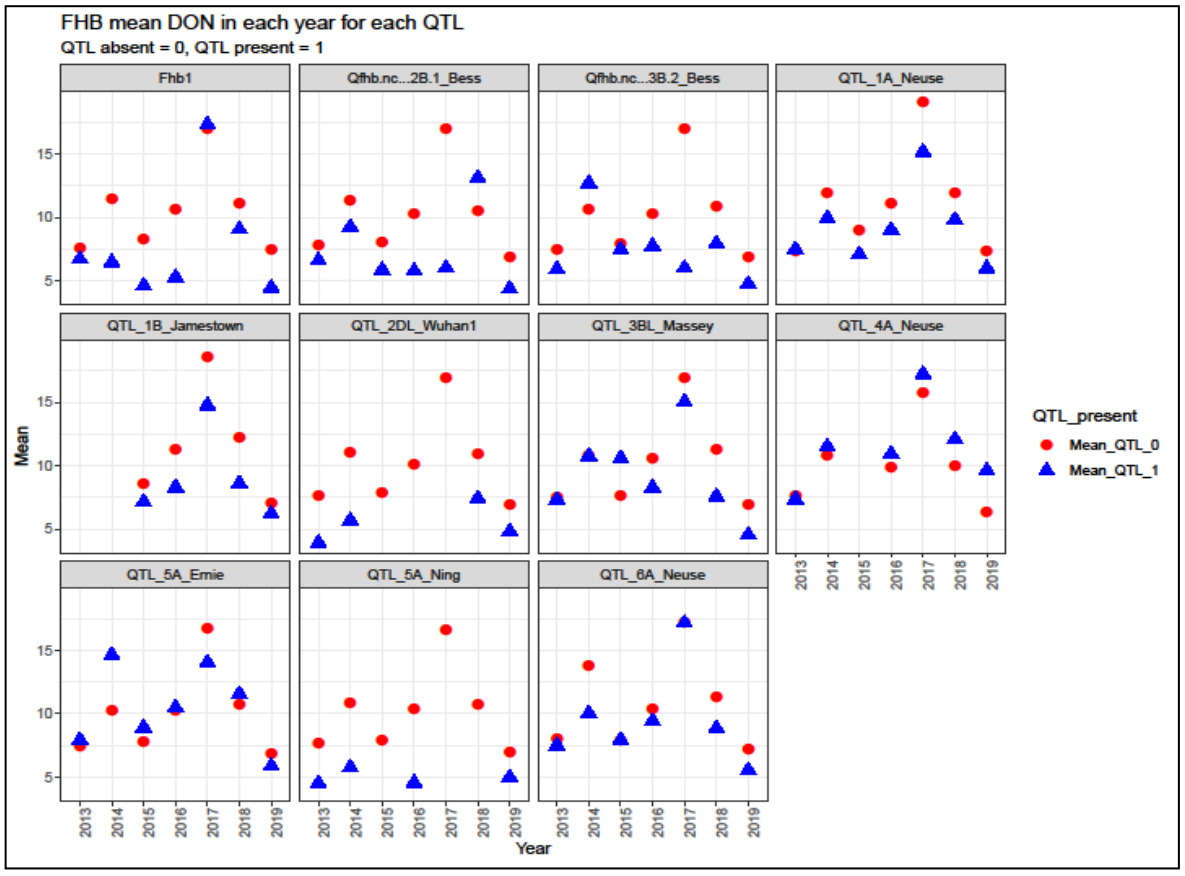
‡ Indicates presence of resistance allele (R) or susceptibility allele (S) at the respective QTL.

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

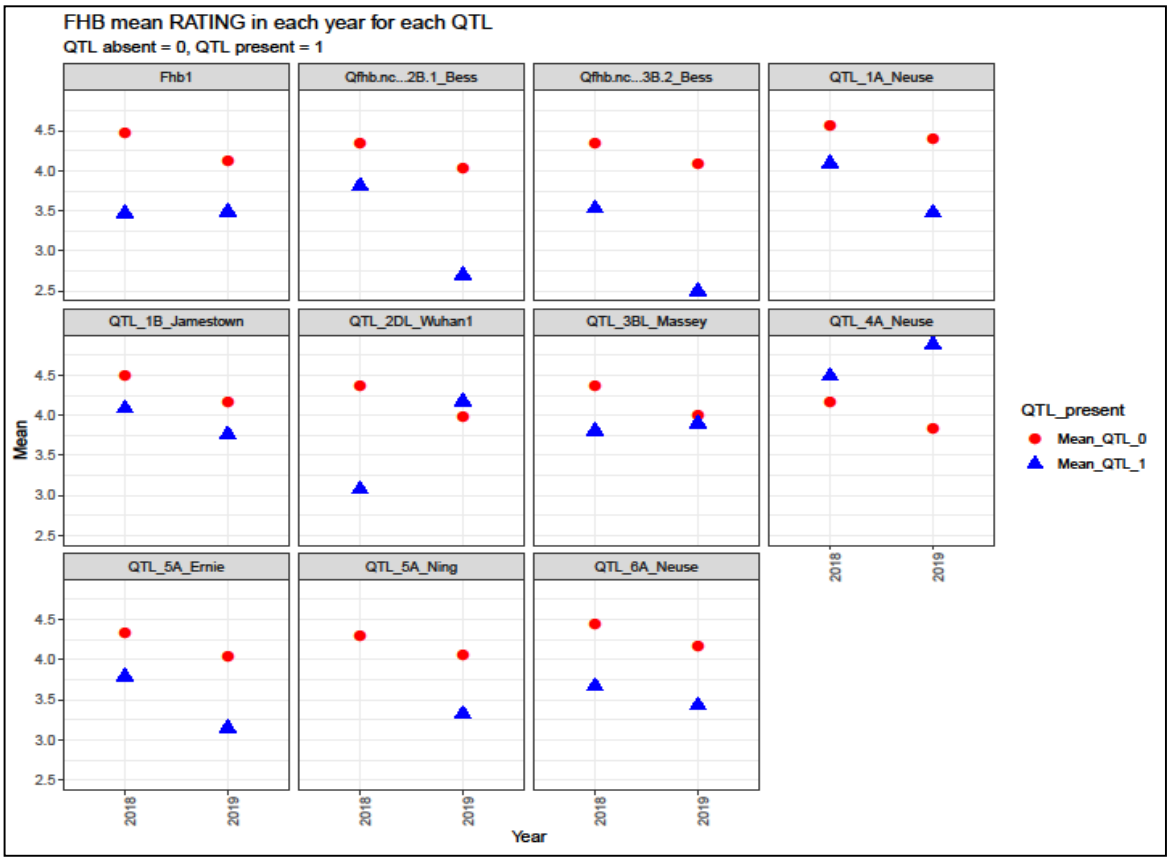
¶ Significance levels of mean comparisons are indicated as: NS (P > 0.05), * (P < 0.05), ** (P < 0.01), * (P < 0.001).**

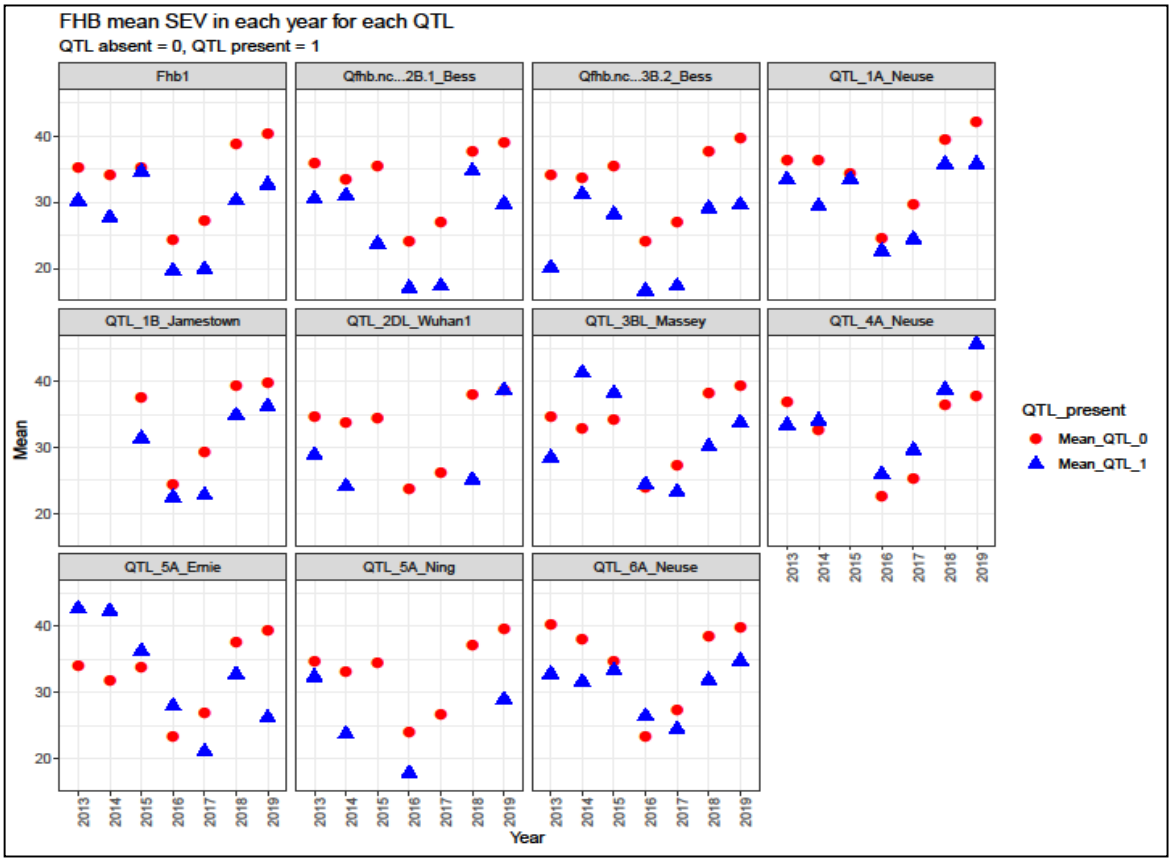
Efficacy of Selected FHB Resistance QTL For FDK (Top) and DON (Bottom), by year, for 2013 throuth 2019.





Efficacy of Selected FHB Resistance QTL For FHB Rating (Top) and Severity (Bottom), by year, for 2013 throuth 2019.





Heading Date (Julian Days*)

	CULTIVAR/ DESIGNATION	W'BORO LA	COL'BIA MO	WARSAW VA	LEX'TON KY	KWS IL	FLOR'CE SC	MEAN ALL LOC.	Rank
1	ERNIE	95	147	114	120	143	107	121	4
2	COKER9835	93	147	115	123	148	107	122	13
3	BESS	93	147	117	123	146	110	123	22
4	JAMESTOWN	93	142	112	119	147	104	119	1
5	SS 8641	93	147	115	125	147	109	123	22
6	AGS 2035	93	147	115	125	143	106	122	13
7	NC14-23372	100	151	118	125	147	113	126	48
8	DH13SRW023-201	100	147	115	125	144	108	123	22
9	NC11546-14	107	147	115	121	146	110	124	31
10	NC11331-38	93	147	116	120	146	120	124	31
11	NC15-21834	107	147	116	122	146	119	126	48
12	NC15-21835	95	147	116	122	147	118	124	31
13	NC15-21836	93	147	116	125	147	119	124	31
14	NC12164-25T	107	144	115	121	146	115	125	44
15	NC12642-81	93	142	114	121	142	115	121	4
16	NC12753-139	100	147	113	121	141	111	122	13
17	AR11289-8-1	100	147	117	126	147	112	125	44
18	ARLA09179UC-1-1	95	147	114	123	146	107	122	13
19	ARGA09485-10-1	100	147	115	126	143	107	123	22
20	AR11255-10-3	95	144	115	126	147	108	122	13
21	ARFHBDH2_72	100	143	114	122	141	108	121	4
22	ARFHBDH2_75	100	142	114	125	145	112	123	22
23	GA15VDH-FHB-MAS33-18LE46	95	144	114	121	146	107	121	4
24	GA15VDH-FHB-MAS23-18LE43	100	147	115	124	146	107	123	22
25	GA15VDH-FHB-MAS30-18ESc4	95	147	114	122	.	111	122	13
26	GA15VDH-FHB-MAS22-18ESc-	107	143	113	120	.	107	122	13
27	GA15VDH-FHB-MAS30-18EDH2	95	147	114	122	.	106	121	4
28	GA15VDH-FHB-MAS27-18ADH3	100	147	114	122	146	115	124	31
29	KWS202	100	147	115	120	143	116	124	31
30	KWS207	100	147	117	123	145	122	126	48
31	KWS219	100	147	115	121	143	118	124	31
32	KWS240	100	142	116	124	145	116	124	31
33	KWS242	107	142	115	121	142	120	124	31
34	LES 172093	107	143	116	122	144	120	125	44
35	LES 167851	107	142	115	121	146	114	124	31
36	LES 70022	93	144	115	120	145	108	121	4
37	LA08080C-31-1	100	142	115	126	149	110	124	31
38	LA13197SC-46	107	147	114	123	.	106	124	31
39	LA15203-LDH112	93	142	115	123	147	112	122	13
40	LA15VDH-FHB-MAS10-16	107	142	113	119	149	111	123	22
41	LA15VDH-FHB-MAS10-18	107	147	115	123	147	113	125	44
42	LANCDH11558-109	93	142	114	121	145	106	120	2
43	13VTK434-89	93	142	114	120	145	120	122	13
44	DH13SRW021-70	100	143	115	120	143	118	123	22
45	VA11MAS2-68-4-1-3	100	142	114	120	140	108	121	4
46	VA17W-74	95	143	114	121	143	107	120	2
47	VA17W-75	100	144	114	120	143	106	121	4
48	VA17W-176	100	147	114	122	146	107	123	22
49	15VDH-FHB-MAS33-30	107	142	111	121	139	107	121	4
50	13VTK429-3	95	147	117	123	144	120	124	31
	Mean	97	145	115	122	145	112	123	
	LSD (0.05)	.	.	3	3	5.1	.	7	
	CV%	.	.	1.7	1.2	1.7	.	2.7	

*Days after December 31, 2018

Plant Height (in)

	CULTIVAR/ DESIGNATION	WARSAW VA	KWS IL	LEX'TON KY	MEAN ALL LOC.	RANK
1	ERNIE	31	31	34	32	*11*
2	COKER9835	30	25	34	30	*5*
3	BESS	37	36	35	36	*46*
4	JAMESTOWN	32	33	30	32	*11*
5	SS 8641	36	29	33	33	*21*
6	AGS 2035	36	37	34	34	*33*
7	NC14-23372	35	34	35	35	*41*
8	DH13SRW023-201	34	31	35	33	*21*
9	NC11546-14	31	33	36	33	*21*
10	NC11331-38	32	31	36	33	*21*
11	NC15-21834	37	35	37	36	*46*
12	NC15-21835	37	30	35	34	*33*
13	NC15-21836	36	32	36	35	*41*
14	NC12164-25T	35	32	36	34	*33*
15	NC12642-81	35	29	35	33	*21*
16	NC12753-139	34	33	36	34	*33*
17	AR11289-8-1	38	29	37	35	*41*
18	ARLA09179UC-1-1	36	28	33	32	*11*
19	ARGA09485-10-1	38	36	37	37	*50*
20	AR11255-10-3	37	34	37	36	*46*
21	ARFHBDH2_72	33	33	32	32	*11*
22	ARFHBDH2_75	32	28	32	30	*5*
23	GA15VDH-FHB-MAS33-18LE46	36	29	32	32	*11*
24	GA15VDH-FHB-MAS23-18LE43	30	27	31	29	*2*
25	GA15VDH-FHB-MAS30-18ESc4	31	.	30	29	*2*
26	GA15VDH-FHB-MAS22-18ESc-4	35	.	32	32	*11*
27	GA15VDH-FHB-MAS30-18EDH2	32	.	30	30	*5*
28	GA15VDH-FHB-MAS27-18ADH3	34	28	36	33	*21*
29	KWS202	35	33	35	34	*33*
30	KWS207	31	30	31	31	*8*
31	KWS219	33	29	30	31	*8*
32	KWS240	36	35	36	36	*45*
33	KWS242	35	34	33	34	*33*
34	LES 172093	38	33	35	35	*41*
35	LES 167851	34	31	34	33	*21*
36	LES 70022	35	30	34	33	*21*
37	LA08080C-31-1	33	22	32	29	*2*
38	LA13197SC-46	34	.	32	32	*11*
39	LA15203-LDH112	34	31	34	33	*21*
40	LA15VDH-FHB-MAS10-16	36	27	36	33	*21*
41	LA15VDH-FHB-MAS10-18	34	30	36	33	*21*
42	LANCDH11558-109	33	29	33	32	*11*
43	13VTK434-89	38	35	35	36	*46*
44	DH13SRW021-70	33	32	31	32	*11*
45	VA11MAS2-68-4-1-3	27	28	29	28	*1*
46	VA17W-74	33	33	33	33	*21*
47	VA17W-75	35	33	33	34	*33*
48	VA17W-176	34	27	33	31	*8*
49	15VDH-FHB-MAS33-30	33	34	31	32	*11*
50	13VTK429-3	34	33	34	34	*33*
	Mean	34	31	34	33	
	LSD (0.05)	.	7	3	4	
	CV%	.	10.0	4.1	5.7	

Leaf Disease Ratings

	CULTIVAR/ DESIGNATION	Leaf Rust Reaction 0-3 TCRKG VA	Leaf Rust Reaction 0-3 TNRJJ VA	Bacterial Leaf Streak 0-9 KWS IL
1	ERNIE	3	3	4.0
2	COKER9835	0;	3-	5.0
3	BESS	3	3-	5.0
4	JAMESTOWN	3-	23	7.0
5	SS 8641	1;	1;	4.0
6	AGS 2035	3-;	23-	2.5
7	NC14-23372	21;	21;	3.0
8	DH13SRW023-201	21;	23-	3.0
9	NC11546-14	21;	23	.
10	NC11331-38	0;1	;1-	2.0
11	NC15-21834	23-	3-	4.0
12	NC15-21835	3-	23;	3.0
13	NC15-21836	23	23-	5.0
14	NC12164-25T	23;	3	4.0
15	NC12642-81	21;	2+;	3.0
16	NC12753-139	23;	2;	5.5
17	AR11289-8-1	1-;	1;	3.0
18	ARLA09179UC-1-1	3	2;	3.0
19	ARGA09485-10-1	12-;	1;	2.0
20	AR11255-10-3	2N	0;	2.0
21	ARFHBDH2_72	0;	1-;	4.0
22	ARFHBDH2_75	;1=	12;	3.0
23	GA15VDH-FHB-MAS33-18LE46	1;	12-;	.
24	GA15VDH-FHB-MAS23-18LE43F	;1=	23;	3.0
25	GA15VDH-FHB-MAS30-18ESc43F	0;	1;	.
26	GA15VDH-FHB-MAS22-18ESc-41F	1+;	12;	.
27	GA15VDH-FHB-MAS30-18EDH29F	0;	;1-	.
28	GA15VDH-FHB-MAS27-18ADH33F	;1=	;1=	.
29	KWS202	3	23	5.0
30	KWS207	2;	;1=	4.5
31	KWS219	3-	23	3.5
32	KWS240	12-;	21;	2.0
33	KWS242	3	23;	2.0
34	LES 172093	3	3-	2.5
35	LES 167851	3	3	1.5
36	LES 70022	32;	3-	1.5
37	LA08080C-31-1	32;	2+;	.
38	LA13197SC-46	12;	12;	.
39	LA15203-LDH112	1;	1;	4.5
40	LA15VDH-FHB-MAS10-16	0;	12-;	.
41	LA15VDH-FHB-MAS10-18	23;	12;	3.0
42	LANCDH11558-109	3	21	2.5
43	13VTK434-89	23;	23;	3.0
44	DH13SRW021-70	0;	23	4.5
45	VA11MAS2-68-4-1-3	3-	12;	6.0
46	VA17W-74	0;	23	1.5
47	VA17W-75	0;	3-	1.5
48	VA17W-176	0;	0;/3	2.5
49	15VDH-FHB-MAS33-30	;1=	1;	2.0
50	13VTK429-3	3-	21;	1.5
	Mean	.	.	3.3
	LSD (0.05)	.	.	2.2
	CV%	.	.	30.7

GRAIN YIELD, TEST WEIGHT, WINTER KILL, AWN TYPE

ENTRY NO	CULTIVAR/ DESIGNATION	YIELD VA bu / ac	Rank	YIELD VA % Mean	TWT VA lb / bu	Rank	Winter Kill KWS IL 0 - 9	Awn type† WVA
1	ERNIE	66	29	82	55.5	29	3.5	AL
2	COKER9835	79	16	98	56.8	22	6.0	TA-AL
3	BESS	74	21	92	57.8	15	4.5	AL
4	JAMESTOWN	76	19	94	58.1	13	9.0	A
5	SS 8641	76	19	95	57.2	19	7.5	TA
6	AGS 2035	78	17	96	56.8	22	1.5	A
7	NC14-23372	74	21	92	58.3	11	5.0	A
8	DH13SRW023-201	74	21	92	58.3	11	4.0	A
9	NC11546-14	76	19	94	58.0	14	9.0	A
10	NC11331-38	68	27	85	58.3	11	4.5	A
11	NC15-21834	79	16	98	58.9	6	4.5	A
12	NC15-21835	77	18	96	58.7	8	5.0	A
13	NC15-21836	79	16	98	59.2	4	5.0	A
14	NC12164-25T	82	13	102	58.8	7	6.0	AL
15	NC12642-81	85	10	106	58.2	12	7.0	A
16	NC12753-139	83	12	103	59.2	4	3.5	A
17	AR11289-8-1	76	19	95	60.5	1	8.5	A
18	ARLA09179UC-1-1	84	11	104	58.9	6	8.5	A
19	ARGA09485-10-1	80	15	100	54.1	33	7.0	A
20	AR11255-10-3	77	18	96	59.3	3	8.5	A
21	ARFHBDH2_72	76	19	95	59.1	5	2.0	A
22	ARFHBDH2_75	94	2	117	58.3	11	7.0	TA
23	GA15VDH-FHB-MAS33-18LE46	90	5	112	54.4	32	8.5	AL
24	GA15VDH-FHB-MAS23-18LE43F	78	17	97	57.7	16	1.5	A
25	GA15VDH-FHB-MAS30-18ESc43F	80	15	99	56.7	23	9.0	A
26	GA15VDH-FHB-MAS22-18ESc-41F	89	6	111	57.8	15	9.0	AL
27	GA15VDH-FHB-MAS30-18EDH29F	80	15	100	54.9	31	9.0	A
28	GA15VDH-FHB-MAS27-18ADH33F	79	16	98	56.9	21	9.0	A
29	KWS202	89	6	110	53.7	34	1.5	AL
30	KWS207	87	8	108	56.5	25	1.5	TA-AL
31	KWS219	83	12	103	58.5	10	4.5	AL
32	KWS240	86	9	107	56.6	24	2.5	A
33	KWS242	91	4	114	56.2	27	2.0	A
34	LES 172093	83	12	103	56.9	21	3.5	AL
35	LES 167851	82	13	103	60.2	2	6.0	A
36	LES 70022	88	7	110	57.1	20	4.5	AL
37	LA08080C-31-1	84	11	104	55.1	30	9.0	A
38	LA13197SC-46	87	8	108	58.0	14	9.0	A
39	LA15203-LDH112	90	5	112	55.6	28	5.0	A
40	LA15VDH-FHB-MAS10-16	72	23	90	56.3	26	9.0	A
41	LA15VDH-FHB-MAS10-18	76	19	94	56.5	25	4.0	AL
42	LANCDH11558-109	89	6	111	57.3	18	5.5	A
43	13VTK434-89	78	17	96	59.3	3	5.5	A
44	DH13SRW021-70	73	22	91	52.6	35	3.5	TA-AL
45	VA11MAS2-68-4-1-3	65	30	81	58.0	14	3.0	AL
46	VA17W-74	83	12	103	58.6	9	1.5	TA-AL
47	VA17W-75	85	10	105	57.6	16	1.5	TA-AL
48	VA17W-176	95	1	118	57.2	19	6.5	AL
49	15VDH-FHB-MAS33-30	93	3	116	59.3	3	7.0	A
50	13VTK429-3	89	6	110	57.5	17	3.0	A
	Mean	81		101	57.4		5.4	.
	LSD (0.05)	.		.	.		2.7	.
	CV%	.		.	.		24.4	.

†Awn type: A=Awned, AL=Awnletted, TA=Tip Awns

Hessian Fly Screening
(Resistant - Susceptible Plants)[1]

	CULTIVAR/ DESIGNATION	Bio B R-S	Bio C R-S	Bio D R-S	Bio O R-S	Bio L R-S	*H13*
1	ERNIE	0-18	0-15	0-16	0-17	0-20	*no*
2	COKER9835	0-16	0-18	0-13	0-17	0-18	*no*
3	BESS	0-16	0-16	0-14	0-16	0-18	*no*
4	JAMESTOWN	15-0	18-1	16-0	0-17	0-14	*no*
5	SS 8641	12-4	12-4	16-3	13-4	3-13	*no*
6	AGS 2035	-	-	-	-	-	-
7	NC14-23372	14-0	16-0	16-2	14-6	18-2	*no*
8	DH13SRW023-201	0-15	0-18	0-20	0-16	0-18	*no*
9	NC11546-14	17-0	18-0	16-0	16-1	14-0	*H13*
10	NC11331-38	12-0	19-0	13-0	18-0	16-1	*het*
11	NC15-21834	0-16	0-18	0-20	0-18	0-17	*no*
12	NC15-21835	0-15	0-17	0-17	0-16	0-19	*no*
13	NC15-21836	0-16	0-17	0-15	0-18	0-19	*no*
14	NC12164-25T	18-0	18-0	19-0	15-3	8-9	*no*
15	NC12642-81	17-0	15-0	21-0	18-0	21-0	*H13*
16	NC12753-139	18-0	13-1	17-0	17-1	9-5	*no*
17	AR11289-8-1	0-18	0-17	0-18	0-17	0-16	*no*
18	ARLA09179UC-1-1	0-16	0-21	0-16	0-17	0-19	*no*
19	ARGA09485-10-1	0-19	0-16	0-17	19-2	0-18	*no*
20	AR11255-10-3	0-16	0-16	0-22	11-5	0-17	*no*
21	ARFHBDH2_72	16-0	18-2	18-0	0-16	0-15	*no*
22	ARFHBDH2_75	0-19	0-18	0-22	0-20	0-19	*het*
23	GA15VDH-FHB-MAS33-18LE46	15-0	0-16	20-0	11-4	16-1	*no*
24	GA15VDH-FHB-MAS23-18LE43F	19-0	0-16	0-19	0-17	0-18	*no*
25	GA15VDH-FHB-MAS30-18ESc43F	15-0	0-16	18-0	0-13	0-15	*no*
26	GA15VDH-FHB-MAS22-18ESc-41F	19-1	18-0	20-0	17-0	17-0	*H13*
27	GA15VDH-FHB-MAS30-18EDH29F	20-0	0-16	20-0	0-21	0-21	*no*
28	GA15VDH-FHB-MAS27-18ADH33F	20-0	0-18	20-0	0-19	0-17	*no*
29	KWS202	0-22	0-18	0-16	0-17	0-17	*no*
30	KWS207	0-21	0-16	0-19	0-18	0-19	*no*
31	KWS219	0-17	0-16	0-19	0-17	0-18	*no*
32	KWS240	0-17	0-17	0-17	11-3	0-15	*no*
33	KWS242	19-0	0-18	15-0	0-15	0-18	*het*
34	LES 172093	0-18	0-17	0-15	0-16	0-17	*no*
35	LES 167851	15-2	0-20	0-21	0-15	0-14	*no*
36	LES 70022	0-18	0-14	0-15	11-5	0-17	*no*
37	LA08080C-31-1	12-1	16-0	19-0	18-0	16-0	*H13*
38	LA13197SC-46	0-17	0-16	0-18	0-15	0-16	*no*
39	LA15203-LDH112	20-0	17-0	14-1	12-4	12-3	*no*
40	LA15VDH-FHB-MAS10-16	15-1	21-1	16-0	12-5	12-4	*no*
41	LA15VDH-FHB-MAS10-18	17-0	19-0	17-0	0-18	0-21	*no*
42	LANCDH11558-109	17-0	17-0	16-0	0-19	0-18	*no*
43	13VTK434-89	18-1	17-0	18-2	0-21	0-18	*no*
44	DH13SRW021-70	0-24	0-20	0-17	0-21	0-25	*no*
45	VA11MAS2-68-4-1-3	23-0	17-0	19-0	17-1	20-0	*het*
46	VA17W-74	18-3	19-0	21-0	3-14	0-20	*no*
47	VA17W-75	14-2	17-0	21-0	0-15	0-22	*no*
48	VA17W-176	0-22	0-15	0-16	0-16	0-19	*no*
49	15VDH-FHB-MAS33-30	0-20	0-18	0-19	0-20	0-19	*no*
50	13VTK429-3	0-18	0-20	0-19	0-20	0-19	*no*

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

Milling and Baking Quality Scores[1]

	Cultivar/ Designation	FLOUR YIELD %	SOFT. EQUIV. %	TEST WEIGHT lb/bu	KERNEL PROT. (at 12%)	FLOUR PROT. (at 14%)	LACTIC ACID SRC(%)	Na_2CO_3 SRC %	SKCS Ker. Hardness	SKCS Ker. Dia. mm	SKCS Ker. Wt mg
1	ERNIE	69.3	58.5	57.2	10.1	7.1	108	66.5	-3.6	3.1	40.7
2	COKER9835	69.7	65.4	56.9	9.0	6.6	101	76.1	1.4	2.7	37.0
3	BESS	67.5	57.4	59.2	9.6	7.6	113	70.2	10.3	2.6	33.7
4	JAMESTOWN	68.5	59.9	60.2	9.8	7.3	127	73.7	9.8	2.9	33.3
5	SS 8641	68.2	57.7	59.9	9.7	7.7	133	67.5	15.8	2.7	35.6
6	AGS 2035	71.9	59.2	58.4	9.6	7.2	117	65.8	-0.7	3.0	42.5
7	NC14-23372	67.2	55.1	60.3	10.7	8.0	109	69.8	19.0	2.9	36.7
8	DH13SRW023-201	65.1	49.7	62.5	11.2	8.9	123	72.1	28.3	2.8	34.2
9	NC11546-14	67.4	61.2	60.4	9.9	7.5	131	70.9	17.6	2.8	35.5
10	NC11331-38	67.8	56.5	60.4	10.7	8.1	137	69.0	8.4	2.9	37.4
11	NC15-21834	66.4	55.5	60.8	9.5	8.0	129	73.0	11.6	2.9	42.1
12	NC15-21835	67.5	56.8	60.6	9.6	8.0	132	74.0	13.2	2.8	38.8
13	NC15-21836	66.3	54.7	60.6	9.0	7.6	128	74.2	12.4	2.8	39.8
14	NC12164-25T	69.2	53.6	60.7	10.1	8.0	131	65.1	18.0	2.8	36.1
15	NC12642-81	69.0	59.4	60.4	10.3	8.0	132	68.2	10.5	2.9	37.7
16	NC12753-139	67.7	58.9	61.0	10.3	7.8	154	71.2	12.6	2.9	37.9
17	AR11289-8-1	68.9	55.2	61.9	11.7	9.0	136	67.5	16.6	2.8	34.8
18	ARLA09179UC-1-1	71.4	58.9	60.7	10.5	8.1	134	62.2	3.9	2.9	37.8
19	ARGA09485-10-1	69.9	58.5	56.1	10.3	7.8	109	66.5	7.7	3.1	42.4
20	AR11255-10-3	70.2	58.8	61.3	10.1	7.8	112	69.8	5.7	3.0	42.5
21	ARFHBDH2_72	65.4	52.8	60.7	11.5	8.7	147	75.7	33.2	2.8	32.2
22	ARFHBDH2_75	66.5	56.3	59.8	9.6	7.7	139	76.0	30.4	2.7	31.3
23	GA15VDH-FHB-MAS33-18LE46	68.3	64.4	56.7	10.0	7.4	151	72.0	0.9	2.6	36.1
24	GA15VDH-FHB-MAS23-18LE43F	68.3	58.0	59.6	10.1	7.6	117	70.9	17.6	2.7	30.0
25	GA15VDH-FHB-MAS30-18ESc43F	69.3	64.1	58.0	10.0	7.2	121	73.6	-1.8	2.8	34.8
26	GA15VDH-FHB-MAS22-18ESc-41F	70.3	64.0	58.5	9.8	7.6	125	70.3	2.5	2.9	38.3
27	GA15VDH-FHB-MAS30-18EDH29F	69.6	64.5	57.5	10.0	7.1	120	72.8	-1.4	2.8	34.4
28	GA15VDH-FHB-MAS27-18ADH33F	68.4	59.4	59.4	9.7	7.2	121	74.5	10.8	2.9	36.6
29	KWS202	70.5	65.3	55.4	9.3	6.6	119	70.2	-1.1	2.8	39.2
30	KWS207	69.2	63.7	58.1	9.5	6.9	92	74.3	0.4	2.7	35.9
31	KWS219	67.6	56.2	60.1	10.4	7.6	136	69.9	17.7	2.8	32.3
32	KWS240	68.5	61.7	58.1	9.8	6.9	127	72.1	7.8	2.7	34.5
33	KWS242	70.0	66.7	57.6	9.1	6.3	112	72.1	1.0	2.7	33.4
34	LES 172093	68.6	63.5	58.2	9.3	6.8	101	68.9	6.4	2.6	34.2
35	LES 167851	70.6	55.4	60.2	9.2	7.3	122	71.3	9.8	2.9	40.2
36	LES 70022	71.6	52.3	58.3	10.0	7.4	100	68.1	21.8	2.8	34.5
37	LA08080C-31-1	68.9	61.2	56.8	9.7	6.9	124	74.9	9.5	3.0	39.5
38	LA13197SC-46	69.3	57.9	58.1	10.9	8.4	127	70.2	13.5	3.0	39.4
39	LA15203-LDH112	69.2	56.7	57.6	10.4	7.7	122	69.9	14.0	2.8	36.7
40	LA15VDH-FHB-MAS10-16	66.6	56.1	59.1	10.4	8.2	116	68.5	20.8	2.6	32.6
41	LA15VDH-FHB-MAS10-18	67.9	59.5	58.5	10.7	8.0	131	65.9	16.6	2.7	32.3
42	LANCDH11558-109	70.4	61.4	60.4	9.6	7.1	127	74.6	-1.6	2.9	39.9
43	13VTK434-89	68.5	61.0	60.4	10.0	7.2	121	69.3	6.6	2.8	38.0
44	DH13SRW021-70	70.1	63.5	55.6	9.2	6.6	96	71.9	10.0	2.7	35.0
45	VA11MAS2-68-4-1-3	70.5	58.2	59.3	10.3	7.6	124	63.5	7.5	2.8	35.7
46	VA17W-74	67.4	56.6	60.0	9.9	7.3	133	76.2	17.6	2.7	36.1
47	VA17W-75	67.5	56.6	59.2	9.6	7.3	130	76.7	20.5	2.8	37.5
48	VA17W-176	68.4	57.1	59.2	9.6	7.5	115	70.6	9.8	3.0	44.4
49	15VDH-FHB-MAS33-30	66.6	58.1	60.7	10.0	7.5	130	72.6	19.7	2.7	32.4
50	13VTK429-3	68.4	60.8	58.2	9.8	7.3	121	73.7	15.1	2.8	36.7
	Mean	68.6	58.9	59.2	10.0	7.5	123.2	70.9	11.1	2.8	36.6
	Standard Deviation	1.5	3.7	1.6	0.6	0.6	13.0	3.4	8.6	0.1	3.2

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

Means Across Locations 2018-19

	Cultivar/ Designation	FHB Rating	Rank	FHB Incidence	Rank	FHB Severity	Rank	FHB Index	Rank	FDK	Rank	ISK	Rank	DON	Rank
1	ERNIE	3	4	61	1	22	1	15	3	17	4	33	5	5	8
2	COKER9835	7	48	99	50	65	49	65	49	68	49	74	50	16	47
3	BESS	3	4	71	12	30	13	21	8	16	2	36	10	5	8
4	JAMESTOWN	3	4	67	7	29	8	18	4	21	14	38	14	4	4
5	SS 8641	8	50	97	49	72	50	70	50	76	50	73	49	20	50
6	AGS 2035	6	46	92	47	44	36	41	42	49	46	56	44	16	47
7	NC14-23372	3	4	79	31	29	8	24	18	26	22	39	15	9	35
8	DH13SRW023-201	4	21	79	31	28	6	23	13	27	26	41	20	9	35
9	NC11546-14	3	4	72	14	30	13	24	15	23	17	36	10	6	17
10	NC11331-38	4	21	78	29	44	36	37	38	28	29	47	35	9	35
11	NC15-21834	3	4	75	22	43	35	32	31	24	20	44	29	8	28
12	NC15-21835	3	4	78	29	41	30	31	29	26	22	43	26	8	28
13	NC15-21836	3	4	76	27	37	24	28	24	29	33	45	31	8	28
14	NC12164-25T	5	37	84	39	55	47	46	46	40	42	57	45	9	35
15	NC12642-81	3	4	73	16	36	20	27	22	18	8	37	13	4	4
16	NC12753-139	5	37	86	42	46	41	40	41	38	41	54	40	10	41
17	AR11289-8-1	4	21	79	31	40	27	32	31	21	14	43	26	9	35
18	ARLA09179UC-1-1	5	37	73	16	34	19	24	15	23	17	39	15	8	28
19	ARGA09485-10-1	4	21	84	39	40	27	32	31	41	43	49	37	12	43
20	AR11255-10-3	5	37	94	48	51	45	48	47	43	44	58	47	14	44
21	ARFHBDH2_72	3	4	67	7	41	30	28	24	26	22	41	20	3	1
22	ARFHBDH2_75	4	21	69	11	36	20	24	18	28	29	41	20	7	23
23	GA15VDH-FHB-MAS33-18LE46	5	37	80	36	45	38	35	36	37	40	49	37	6	17
24	GA15VDH-FHB-MAS23-18LE43F	3	4	62	3	24	3	14	1	17	4	29	1	5	8
25	GA15VDH-FHB-MAS30-18ESc43F	3	4	72	14	26	4	19	6	27	26	36	10	5	8
26	GA15VDH-FHB-MAS22-18ESc-41F	5	37	75	22	45	38	36	37	30	37	46	32	4	4
27	GA15VDH-FHB-MAS30-18EDH29F	3	4	75	22	29	8	22	11	24	20	39	15	4	4
28	GA15VDH-FHB-MAS27-18ADH33F	4	21	76	27	32	15	25	20	28	29	42	23	8	28
29	KWS202	4	21	81	37	52	46	42	44	29	33	50	39	7	23
30	KWS207	5	37	86	42	45	38	39	39	44	45	54	40	14	44
31	KWS219	2	1	68	9	28	6	21	8	16	2	31	3	6	17
32	KWS240	5	37	84	39	47	42	39	39	34	39	54	40	10	41
33	KWS242	4	21	82	38	49	44	41	42	32	38	54	40	7	23
34	LES 172093	2	1	71	12	29	8	21	8	17	4	35	8	6	17
35	LES 167851	4	21	68	9	27	5	18	4	19	10	34	6	7	23
36	LES 70022	3	4	63	4	36	20	24	15	15	1	32	4	5	8
37	LA08080C-31-1	6	46	90	45	48	43	43	45	52	47	57	45	14	44
38	LA13197SC-46	7	48	91	46	58	48	53	48	55	48	59	48	18	49
39	LA15203-LDH112	4	21	79	31	41	30	34	34	26	22	44	29	9	35
40	LA15VDH-FHB-MAS10-16	2	1	61	1	23	2	14	1	17	4	29	1	3	1
41	LA15VDH-FHB-MAS10-18	3	4	66	6	29	8	20	7	19	10	35	8	3	1
42	LANCDH11558-109	4	21	73	16	40	27	30	28	27	26	42	23	6	17
43	13VTK434-89	3	4	73	16	39	26	29	26	19	10	40	19	5	8
44	DH13SRW021-70	4	21	74	21	42	33	34	34	18	8	39	15	6	17
45	VA11MAS2-68-4-1-3	4	21	79	31	32	15	25	20	29	33	43	26	8	28
46	VA17W-74	4	21	64	5	33	17	22	11	21	14	34	6	5	8
47	VA17W-75	4	21	73	16	33	17	23	13	20	13	42	23	5	8
48	VA17W-176	4	21	75	22	38	25	27	22	29	33	46	32	7	23
49	15VDH-FHB-MAS33-30	5	37	75	22	42	33	29	26	23	17	46	32	5	8
50	13VTK429-3	3	4	86	42	36	20	31	29	28	29	47	35	8	28
	Mean	4		77		39.0		31		29		43		8	
	LSD (0.05)	3		24		21		22		19		14		8	
	CV%	30.6		16.1		27		36.7		34.4		16.6		50.7	
	Correlations with Predic.	0.72		.		0.71		0.73		0.67		.		0.77	

Means Across Locations 2018- 2019

	Cultivar/ Designation	Head. Date	Rank	Plant Ht.	Rank	Flour Yield %	Rank	Softness Equiv. %	Rank	Hessian Fly Bio. L	H13	Fhb1	Fhb Massey 3BL	Fhb 5A_Ning	Fhb 2DL Wuhan 1/W14	Bess 2B	Bess 3B	Jamestown 1B	NC-Neuse 1A	NC-Neuse 6A
1	ERNIE	121	2	32	11	69.3	34	58.5	25	0-20	no	no	F3BM	no	no	no	het	no	F1AN	F6AN
2	COKER9835	122	10	30	5	69.7	38	65.4	49	0-18	no	no	no	no	no	no	no	no	no	no
3	BESS	123	18	36	46	67.5	11	57.4	19	0-18	no	no	no	no	no	F2BB	F3BB	no	F1AN	het
4	JAMESTOWN	119	1	32	11	68.5	24	59.9	34	0-14	no	no	no	no	no	no	no	F1BJ	F1AN	no
5	SS 8641	123	18	33	21	68.2	18	57.7	20	3-13	no	no	no	no	no	no	no	no	no	no
6	AGS 2035	122	2	34	33	71.9	50	59.2	30	-	-	.	.	.	.	.	.	.	.	.
7	NC14-23372	126	35	35	41	67.2	8	55.1	6	18-2	no	Fhb1	no	no	no	no	no	F1BJ	F1AN	F6AN
8	DH13SRW023-201	123	18	33	21	65.1	1	49.7	1	0-18	no	no	no	no	no	no	no	F1BJ	F1AN	no
9	NC11546-14	124	35	33	21	67.4	9	61.2	37	14-0	H13	het	no	no	no	no	no	F1BJ	F1AN	no
10	NC11331-38	124	28	33	21	67.8	16	56.5	13	16-1	het	no	no	no	no	no	no	F1BJ	F1AN	F6AN
11	NC15-21834	126	49	36	46	66.4	4	55.5	9	0-17	no	no	no	no	no	no	no	no	het	no
12	NC15-21835	124	35	34	33	67.5	11	56.8	17	0-19	no	no	no	no	no	no	no	no	F1AN	no
13	NC15-21836	124	35	35	41	66.3	3	54.7	5	0-19	no	no	no	no	no	no	no	no	F1AN	no
14	NC12164-25T	125	45	34	33	69.2	31	53.6	4	8-9	no	Fhb1	no	no	no	no	no	no	no	no
15	NC12642-81	121	10	33	21	69.0	30	59.4	31	21-0	H13	Fhb1	no	no	no	no	no	het	F1AN	het
16	NC12753-139	122	10	34	33	67.7	15	58.9	28	9-5	no	no	no	no	no	no	no	no	no	no
17	AR11289-8-1	125	35	35	41	68.9	28	55.2	7	0-16	no	no	no	no	no	no	no	no	no	no
18	ARLA09179UC-1-1	122	10	32	11	71.4	48	58.9	28	0-19	no	no	no	no	no	no	no	no	no	no
19	ARGA09485-10-1	123	18	37	50	69.9	39	58.5	25	0-18	no	no	no	no	no	no	no	no	no	no
20	AR11255-10-3	122	18	36	46	70.2	42	58.8	27	0-17	no	no	no	no	no	no	no	no	no	no
21	ARFHBDH2_72	121	10	32	11	65.4	2	52.8	3	0-15	no	no	no	no	2DL	no	no	F1BJ	F1AN	no
22	ARFHBDH2_75	123	28	30	5	66.5	5	56.3	12	0-19	het	no	no	F5ANg	no	no	no	no	het	no
23	GA15VDH-FHB-MAS33-18LE46	121	10	32	11	68.3	19	64.4	46	16-1	no	no	F3BM	no	no	no	no	F1BJ	no	no
24	GA15VDH-FHB-MAS23-18LE43F	123	18	29	2	68.3	20	58.0	22	0-18	no	Fhb1	no	F5ANg	no	no	no	no	no	no
25	GA15VDH-FHB-MAS30-18ESc43F	122	10	29	2	69.3	34	64.1	45	0-15	no	Fhb1	no	no	no	no	no	no	no	no
26	GA15VDH-FHB-MAS22-18ESc-41F	122	18	32	11	70.3	43	64.0	44	17-0	H13	het	no	no	no	no	no	no	no	no
27	GA15VDH-FHB-MAS30-18EDH29F	121	2	30	5	69.6	37	64.5	47	0-21	no	Fhb1	no	no	no	no	no	no	no	no
28	GA15VDH-FHB-MAS27-18ADH33F	124	28	33	21	68.4	22	59.4	31	0-17	no	het	het	F5ANg	2DL	no	no	no	het	no
29	KWS202	124	28	34	33	70.5	45	65.3	48	0-17	no	no	no	no	no	no	no	no	F1AN	F6AN
30	KWS207	126	45	31	8	69.2	31	63.7	43	0-19	no	no	no	no	no	no	no	no	no	no
31	KWS219	124	28	31	8	67.6	14	56.2	11	0-18	no	no	F3BM	no	no	no	no	no	F1AN	no
32	KWS240	124	35	36	45	68.5	24	61.7	40	0-15	no	no	no	no	no	no	no	F1BJ	no	no
33	KWS242	124	45	34	33	70.0	40	66.7	50	0-18	het	no	no	no	no	no	no	no	no	no
34	LES 172093	125	49	35	41	68.6	27	63.5	41	0-17	no	no	no	no	no	no	F3BB	F1BJ	F1AN	F6AN
35	LES 167851	124	35	33	21	70.6	47	55.4	8	0-14	no	no	no	no	no	no	no	no	het	no
36	LES 70022	121	2	33	21	71.6	49	52.3	2	0-17	no	no	no	no	no	no	no	no	F1AN	het
37	LA08080C-31-1	124	35	29	2	68.9	28	61.2	37	16-0	H13	no	no	no	no	no	no	F1BJ	het	no
38	LA13197SC-46	124	28	32	11	69.3	34	57.9	21	0-16	no	no	no	no	no	no	no	no	F1AN	no
39	LA15203-LDH112	122	18	33	21	69.2	31	56.7	16	12-3	no	no	no	no	no	no	no	het	F1AN	no
40	LA15VDH-FHB-MAS10-16	123	35	33	21	66.6	6	56.1	10	12-4	no	Fhb1	no	F5ANg	no	no	no	F1BJ	no	no
41	LA15VDH-FHB-MAS10-18	125	45	33	21	67.9	17	59.5	33	0-21	no	Fhb1	no	no	no	no	no	no	no	no
42	LANCDH11558-109	120	2	32	11	70.4	44	61.4	39	0-18	no	no	no	no	no	no	no	no	het	no
43	13VTK434-89	122	18	36	46	68.5	24	61.0	36	0-18	no	no	no	no	no	no	no	het	no	no
44	DH13SRW021-70	123	28	32	11	70.1	41	63.5	41	0-25	no	no	no	no	no	no	no	no	no	no
45	VA11MAS2-68-4-1-3	121	2	28	1	70.5	45	58.2	24	20-0	het	no	no	no	no	no	het	no	het	no
46	VA17W-74	120	2	33	21	67.4	9	56.6	14	0-20	no	no	no	no	no	no	no	no	F1AN	F6AN
47	VA17W-75	121	2	34	33	67.5	11	56.6	14	0-22	no	no	no	no	no	het	no	no	F1AN	F6AN
48	VA17W-176	123	18	31	8	68.4	22	57.1	18	0-19	no	no	no	no	no	no	no	no	no	no
49	15VDH-FHB-MAS33-30	121	10	32	11	66.6	6	58.1	23	0-19	no	Fhb1	F3BM	no	2DL	no	no	F1BJ	no	no
50	13VTK429-3	124	35	34	33	68.4	21	60.8	35	0-19	no	no	no	no	no	no	no	F1BJ	F1AN	no
	Mean	122		33		68.6		58.9												
	LSD (0.05)	7		4		.		.												
	CV%	2.7		5.7		.		.												

Means Over the 2018 and 2019 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	58	28	18	14	27	7	123	32	67.6	58.6
COKER9835	7	92	68	63	62	65	18	125	30	67.2	62.9
BESS	3	58	28	18	13	28	7	124	36	66.3	58.3
JAMESTOWN	3	66	32	20	19	33	6	122	32	65.6	58.2
NC14-23372	3	68	33	25	22	32	10	127	35	67.1	55.7
DH13SRW023-201	4	65	28	20	24	33	11	125	34	65.3	50.3
Mean	4	68	36	27	26	36	10	124	33	66.5	57.3
LSD (0.05)	1	19	9	9	5	7	2	2	1	ns	5.0
CV%	10.7	10.8	10.0	13.1	8.5	7.2	7.6	0.5	1.3	2.7	3.6

Means and Variances of Genotypic Estimated Breeding Values for Severity of progenies from selected crosses between entries in the 2017-18 and 2018-19 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%
GA1035-DH49-17LE52	2018	BESS	2019	21.5	11.1	15.6
NC14-23373	2018	GA1035-DH49-17LE52	2018	21.5	10.2	16.0
NC14-23372	2018	GA1035-DH49-17LE52	2018	21.5	10.0	16.0
GA1035-DH49-17LE52	2018	KWS219	2019	22.6	13.8	16.1
GA1035-DH49-17LE52	2018	NC14-23372	2019	21.6	10.0	16.1
GA1035-DH49-17LE52	2018	NC11331-6	2018	22.2	10.4	16.5
GA091537-17A29	2018	GA1035-DH49-17LE52	2018	21.8	9.3	16.6
GA1035-DH49-17LE52	2018	LA14076-LDH6	2018	22.2	9.3	16.9
GA1035-DH49-17LE52	2018	LES-70022	2019	23.2	11.6	17.3
GA1035-DH49-17LE52	2018	LA08277C-P5-3-1	2018	23.2	10.7	17.6
GA13VA-FHB-DH83-17EL53	2018	GA1035-DH49-17LE52	2018	23.0	8.4	17.9
GA1035-DH49-17LE52	2018	NC11546-14	2019	23.2	9.2	17.9
AR09009-8-3	2018	GA1035-DH49-17LE52	2018	23.0	7.2	18.3
AR09006-10-2	2018	GA1035-DH49-17LE52	2018	23.2	7.9	18.4
ERNIE	2018	GA1035-DH49-17LE52	2018	23.7	9.1	18.4
GA121086-LDH20-17A24	2018	GA1035-DH49-17LE52	2018	24.0	10.3	18.5
GA1035-DH49-17LE52	2018	ERNIE	2019	23.9	9.8	18.5
NC14-23373	2018	BESS	2019	24.7	12.3	18.6
BESS	2019	KWS219	2019	25.9	17.8	18.6
NC14-23372	2018	BESS	2019	24.7	11.9	18.7
GA1035-DH49-17LE52	2018	LES-167851	2019	25.6	15.8	18.8
BESS	2019	NC14-23372	2019	24.9	12.2	18.9
GA091537-17A29	2018	BESS	2019	25.1	12.5	19.0
BESS	2018	GA1035-DH49-17LE52	2018	24.5	9.9	19.0
AR09045-4-2	2018	GA1035-DH49-17LE52	2018	23.8	7.5	19.1
GA1035-DH49-17LE52	2018	15VDH-FHB-MAS33-30	2019	25.1	12.4	19.1
GA1035-DH49-17LE52	2018	NC11331-38	2019	24.6	9.8	19.2
NC14-23372	2018	GA091537-17A29	2018	24.9	10.6	19.2
JAMESTOWN	2018	GA1035-DH49-17LE52	2018	24.3	8.3	19.2
GA1035-DH49-17LE52	2018	LA12120SB-56-4	2018	24.2	8.1	19.3
NC14-23373	2018	GA091537-17A29	2018	24.9	10.4	19.4
GA1035-DH49-17LE52	2018	LA15VDH-FHB-MAS10-18	2019	25.4	12.0	19.4
GA1035-DH49-17LE52	2018	KWS193	2018	24.3	7.5	19.5
GA1035-DH49-17LE52	2018	JAMESTOWN	2019	24.5	8.3	19.5
NC14-23372	2018	KWS219	2019	25.8	12.7	19.6
GA091537-17A29	2018	NC14-23372	2019	25.2	10.4	19.6
NC14-23373	2018	KWS219	2019	25.8	11.9	19.8
NC11331-6	2018	KWS219	2019	26.7	15.8	19.9
GA1035-DH49-17LE52	2018	NC15-23047	2018	26.0	12.7	19.9
NC14-23372	2019	KWS219	2019	26.1	12.5	19.9
GA1035-DH49-17LE52	2018	LA15VDH-FHB-MAS10-16	2019	25.7	11.2	19.9
GA1035-DH49-17LE52	2018	NC12642-81	2019	25.9	11.8	20.0
NC14-23372	2018	LA14076-LDH6	2018	25.4	9.4	20.0
GA091537-17A29	2018	NC11331-6	2018	25.8	11.1	20.0
NC14-23372	2018	NC11331-6	2018	25.4	9.4	20.1
NC11331-6	2018	BESS	2019	25.6	9.9	20.2
GA1035-DH49-17LE52	2018	12VTK10-156	2018	26.1	11.6	20.2

Means and Variances of Genotypic Estimated Breeding Values for FDK of progenies from selected crosses between entries in the 2017-18 and 2018-19 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%
GA1035-DH49-17LE52	2018	BESS	2019	18.3	11.4	12.4
GA091537-17A29	2018	BESS	2019	19.8	14.7	13.0
GA13VA-FHB-DH83-17EL53	2018	BESS	2019	19.5	13.1	13.2
GA1035-DH49-17LE52	2018	LES-70022	2019	20.4	12.7	14.1
DH12SRW057-081	2018	BESS	2019	20.0	11.2	14.2
NC14-23372	2018	BESS	2019	20.4	12.9	14.2
NC14-23373	2018	BESS	2019	20.4	13.0	14.2
GA1035-DH49-17LE52	2018	NC11331-6	2018	19.8	9.9	14.3
GA091537-17A29	2018	GA1035-DH49-17LE52	2018	20.0	10.8	14.3
GA1035-DH49-17LE52	2018	NC15-23047	2018	20.0	10.9	14.3
13VA-FHB-DH131	2018	BESS	2019	21.0	14.5	14.4
NC11331-6	2018	BESS	2019	19.7	9.3	14.4
BESS	2019	KWS219	2019	20.7	12.8	14.5
NC14-23373	2018	GA1035-DH49-17LE52	2018	20.7	12.9	14.5
NC14-23372	2018	GA1035-DH49-17LE52	2018	20.7	12.8	14.5
NC14-20369	2018	BESS	2019	20.4	11.2	14.6
BESS	2019	NC14-23372	2019	21.1	13.4	14.7
GA091537-17A29	2018	NC15-23047	2018	21.5	15.5	14.7
ERNIE	2018	GA1035-DH49-17LE52	2018	20.3	10.0	14.7
GA1035-DH49-17LE52	2018	NC14-23372	2019	21.2	13.1	14.8
GA1035-DH49-17LE52	2018	NC14-20369	2018	20.6	11.4	14.8
GA10654-17LE46	2018	BESS	2019	20.7	11.7	14.8
GA13VA-FHB-DH83-17EL53	2018	GA1035-DH49-17LE52	2018	19.8	8.1	14.8
GA091537-17A29	2018	NC14-20369	2018	22.1	17.3	14.8
ERNIE	2019	BESS	2019	20.3	10.2	14.9
GA091537-17A29	2018	NC11331-6	2018	21.2	13.3	14.9
JAMESTOWN	2018	BESS	2019	21.0	12.4	15.0
GA1035-DH49-17LE52	2018	ERNIE	2019	20.6	10.6	15.0
GA1035-DH49-17LE52	2018	KWS219	2019	20.8	10.9	15.0
NC14-23372	2018	GA091537-17A29	2018	21.9	15.4	15.0
GA1035-DH49-17LE52	2018	DH12SRW057-081	2018	20.2	8.6	15.0
L11820	2018	BESS	2019	22.4	17.4	15.1
NC14-23373	2018	GA091537-17A29	2018	21.9	15.3	15.1
GA13VA-FHB-DH83-17EL53	2018	NC11331-6	2018	21.0	11.2	15.2
BESS	2019	LES-70022	2019	20.3	8.8	15.2
ERNIE	2018	GA13VA-FHB-DH83-17EL5	2018	21.3	11.9	15.3
ERNIE	2018	BESS	2019	20.0	7.4	15.3
GA13VA-FHB-DH83-17EL53	2018	NC15-23047	2018	21.3	11.6	15.3
GA10654-17LE46	2018	GA091537-17A29	2018	22.1	15.1	15.4
GA13VA-FHB-DH83-17EL53	2018	KWS219	2019	22.0	13.9	15.4
ERNIE	2018	GA091537-17A29	2018	21.5	12.0	15.5
NC11546-14	2019	BESS	2019	21.1	10.5	15.5
BESS	2019	JAMESTOWN	2019	21.6	12.3	15.5
GA091537-17A29	2018	DH12SRW057-081	2018	21.7	12.7	15.5
GA1035-DH49-17LE52	2018	DH13SRW025-14	2018	21.6	12.3	15.5
L11815	2018	BESS	2019	22.4	15.8	15.5
JAMESTOWN	2018	GA1035-DH49-17LE52	2018	21.3	10.9	15.6

Means and Variances of Genotypic Estimated Breeding Values for DON of progenies from selected crosses between entries in the 2017-18 and 2018-19 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%
NC11331-6	2018	NC12642-81	2019	6.8	3.2	3.8
JAMESTOWN	2018	NC11331-6	2018	6.8	2.9	3.9
NC14-22588	2018	NC11331-6	2018	7.5	4.2	3.9
NC11331-6	2018	JAMESTOWN	2019	6.9	2.9	4.0
NC11331-6	2018	15VDH-FHB-MAS33-30	2019	7.6	3.9	4.2
NC14-20369	2018	NC11331-6	2018	7.4	3.4	4.2
LA14066DH-172	2018	NC12642-81	2019	7.6	3.9	4.2
GA121086-LDH20-17A24	2018	NC11331-6	2018	6.9	2.4	4.2
NC11331-6	2018	LES-70022	2019	7.1	2.7	4.3
NC14-20369	2018	NC12642-81	2019	7.6	3.6	4.3
LA12120SB-56-4	2018	NC14-22588	2018	8.2	5.0	4.4
NC11331-6	2018	KWS219	2019	8.0	4.5	4.4
NC12642-81	2019	LES-70022	2019	7.3	2.9	4.4
NC12642-81	2019	GA-18LE43F	2019	7.2	2.5	4.4
LA12120SB-56-4	2018	LA14066DH-172	2018	8.1	4.1	4.5
NC14-22588	2018	NC12642-81	2019	7.7	3.6	4.5
JAMESTOWN	2018	NC12642-81	2019	7.1	2.2	4.5
NC11331-6	2018	GA-18LE43F	2019	6.9	2.0	4.5
NC11331-6	2018	ARFHBDH2-72	2019	7.6	3.2	4.5
KWS154	2018	NC11331-6	2018	7.7	3.4	4.5
JAMESTOWN	2019	NC12642-81	2019	7.1	2.2	4.5
NC11546-14	2019	NC11331-6	2018	7.4	2.7	4.5
GA10654-17LE46	2018	NC11331-6	2018	7.5	2.7	4.6
BESS	2019	NC12642-81	2019	8.2	4.2	4.6
LA12120SB-56-4	2018	NC14-20369	2018	8.1	4.0	4.6
NC12164-25T	2019	NC12642-81	2019	8.0	3.8	4.6
LA12120SB-56-4	2018	NC12642-81	2019	7.5	2.8	4.6
LA14066DH-172	2018	NC11331-6	2018	7.4	2.5	4.6
GA091537-17A29	2018	NC11331-6	2018	8.6	5.0	4.7
GA121086-LDH20-17A24	2018	NC12642-81	2019	7.2	2.1	4.7
NC11331-6	2018	ARFHBDH2-75	2019	7.6	2.7	4.7
JAMESTOWN	2018	LA14066DH-172	2018	7.7	2.9	4.7
GA10389-17LE56	2018	NC12642-81	2019	7.6	2.8	4.7
NC11331-6	2018	NC12164-25T	2019	7.7	2.9	4.8
LA12120SB-56-4	2018	LES-70022	2019	7.7	3.0	4.8
NC11331-6	2018	DH13SRW023-201	2019	8.1	3.6	4.8
NC11331-6	2018	NC15-21836	2019	7.9	3.4	4.8
LA12120SB-56-4	2018	NC11331-6	2018	7.2	2.0	4.8
LA14066DH-172	2018	KWS219	2019	8.8	5.4	4.8
JAMESTOWN	2018	NC14-22588	2018	7.8	3.0	4.8
NC11331-6	2018	NC15-21834	2019	8.1	3.5	4.8
ERNIE	2018	NC12642-81	2019	8.0	3.4	4.8
LA14066DH-172	2018	15VDH-FHB-MAS33-30	2019	8.4	4.3	4.8
LA14066DH-172	2018	JAMESTOWN	2019	7.7	2.8	4.8
GA-18LE43F	2019	LES-70022	2019	7.4	2.1	4.9
NC12642-81	2019	ARFHBDH2-75	2019	7.8	3.0	4.9
GA10389-17LE56	2018	NC11331-6	2018	7.4	2.1	4.9