SOUTHERN UNIFORM WINTER WHEAT SCAB NURSERY

2017 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

Champaign, Illinois
- Cooperator: Jana Murche
- KWS Cereals USA.

Urbana, Illinois
- Cooperator: Fred Kolb.
- University of Illinois.

Fayetteville and Newport, Arkansas
- Cooperator: Esten Mason.
- University of Arkansas.

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

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

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

Winnsboro, Louisiana.
- Cooperator: Stephen Harrison.
- Louisiana State University.

Griffin, Georgia
- Cooperator: Mohamed Mergoum and Jerry Johnson.
- University of Georgia.

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

Justin Page, Steve Mulkey, Roshan Acharya and George Van Esbroech extremely happy the misting system is up and running

Azaleas and Dogwoods blooming -- Scab infection in progress.

Heavy, natural scab infection, Plymouth, NC, Spring , 2017

Entry List and Pedigrees, 2017 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	NC13-20076	*Jamestown / /GA951231-4E29 / NCAG11*	Murphy	2015-16
6	VA13W-38	*IL99-15867 / Jamestown*	Griffey	2015-16
7	ARLA07133C-19-4	*LA99005UC-31-3/VA05W-500*	Mason	2016-17
8	ARLA07133C-3-4	*LA99005UC-31-3/VA05W-500*	Mason	2016-17
9	ARLA06146E-1-4	*JAMESTOWN/AGS2060*	Mason	2016-17
10	AR08109-17-2	*LA01141D-138/97002-2-1*	Mason	2016-17
11	AR08015-17-4	*97044-10-2/93005-6-1*	Mason	2016-17
12	AR08057-5-1	*AGS2020/97124-4-2*	Mason	2016-17
13	LES15-5369	*VA02W-555/BWX4523*	Obert	2016-17
14	LES15-5499	*VA02W-513/ROANE*	Obert	2016-17
15	LES15-5605	*T814/L900819//McCormick*	Obert	2016-17
16	GA09343-16ES3	*Jamestown/991336-6E9//USG3120*	Mergoum	2016-17
17	GA09410-16ES22	*Jamestown/991371-6E12//991227-6A33/03646-1-2*	Mergoum	2016-17
18	GA09129-16EL56	*991109-6E8 *2/ IL00-8530*	Mergoum	2016-17
19	GA121176-16JS49	*PIO26R94 / Jamestown*	Mergoum	2016-17
20	GA09163-16ES19	*001142-9E23/021245*	Mergoum	2016-17
21	GA09144-16ES23	*Jamestown / Baldwin*	Mergoum	2016-17
22	GA05450-16ES8	*SS 8641/Coker9553*	Mergoum	2016-17
23	GA09054-16ES25	*Jamestown/AGS2026*	Mergoum	2016-17
24	KWS095	*IL04-8445/Sunburst*	Murche	2016-17
25	KWS103	*P99840C4-8-4/21525c1**	Murche	2016-17
26	KWS114	*Trevor/INW0412*	Murche	2016-17
27	KWS122	*Shirley/IL00-8061//MO080104*	Murche	2016-17
28	KWS133	*G59326/B030543*	Murche	2016-17
29	KWS141	*Shirley/IL99-26442*	Murche	2016-17
30	LA08265C-50	*P26R61/LA07175,F1(JAMESTOWN/SS8641)*	Harrison	2016-17
31	LA09101UB-48-3-5	*LA01162D-116-6-4 / NC05-21642*	Harrison	2016-17
32	LW08049C-74-2-5	*CK9700/LA07156,F1(NC04-27669/ARGE97-1060-5-5 (Mason // Freedom / Super Zlatna))*	Harrison	2016-17
33	LA10081C-18	*LA01110D-84-2-C / VA04W-90*	Harrison	2016-17
34	LA11309GS-16	*VA06W-587/LA02015E201*	Harrison	2016-17
35	NC13-23443	*NC04-15533 / VA05W-500 // VA05W-108*	Murphy	2016-17
36	NC13-21213	*Oglethorpe / Jamestown*	Murphy	2016-17
37	NC13-20332	*D1AG11 / VA02-713/ / NC04-15460*	Murphy	2016-17
38	NC14-23372	*Jamestown // NC05-21937/NC-NEUSE(Fhb1)*	Murphy	2016-17
39	NC14-23373	*Jamestown // NC05-21937/NC-NEUSE(Fhb1)*	Murphy	2016-17
40	VA13W-174	*Shirley / Branson // Jamestown*	Griffey	2016-17
41	VA09MAS2-131-6-2	*GA991227-6A33 / Shirley // G41730*	Griffey	2016-17
42	VA14W-32	*VA05W-139 (PION 26R24/McCORMICK) / '5205' (VA01W-205)*	Griffey	2016-17
43	VA07MAS1-7047-1-1-4-2	*McCormick / AGS 2026 // '5205' (VA01W-205)*	Griffey	2016-17
44	DH12SRW056-058	*KY03C-1237-33 / P05247A1-7-3*	Griffey	2016-17
45	DH11SRW061-16	*LA01139D-56-1 / Yorktown (VA08W-294)*	Griffey	2016-17
46	VA09MAS2-131-6-2-4	*GA991227-6A33 / Shirley // G41730*	Griffey	2016-17

FHB Incidence (1-100)

ENTRY NO	CULTIVAR/ DESIGNATION	N'PORT AR	GRIFFIN GA	LEX'TON KY	KWS IL	WINNS LA	COL'BIA MO	WARSAW VA	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	50	90	9	8	23	78	39	42	16	54	4
2	COKER9835	100	99	13	50	90	90	74	74	46	74	47
3	BESS	5	56	15	3	60	68	49	36	5	49	1
4	JAMESTOWN	10	98	10	4	55	65	50	42	16	54	4
5	NC13-20076	0	100	19	4	20	75	56	39	9	51	2
6	VA13W-38	33	99	19	4	35	63	48	43	19	54	4
7	ARLA07133C-19-4	13	55	14	4	30	60	63	34	2	57	11
8	ARLA07133C-3-4	30	88	14	0	30	85	73	46	29	64	40
9	ARLA06146E-1-4	8	95	15	4	50	80	55	44	24	59	17
10	AR08109-17-2	18	82	13	13	30	88	61	43	19	55	7
11	AR08015-17-4	23	100	13	13	15	83	53	43	19	57	11
12	AR08057-5-1	33	98	15	10	30	65	51	43	19	60	25
13	LES15-5369	30	72	17	5	10	70	61	38	8	61	31
14	LES15-5499	23	50	17	10		68	56	37	7	59	17
15	LES15-5605	45	62	19	8	48	63	41	41	13	61	31
16	GA09343-16ES3	33	98	17	18	75	63	63	52	40	61	31
17	GA09410-16ES22	55	94	20	40	20	83	70	55	43	64	40
18	GA09129-16EL56	5	99	15	13	25	68	60	41	13	56	9
19	GA121176-16JS49	18	100	12	5	80	60	75	50	37	61	31
20	GA09163-16ES19	3	83	20	5	50	60	58	40	12	59	17
21	GA09144-16ES23	20	98	18	23	40	70	60	47	32	61	31
22	GA05450-16ES8	40	97	19	8	55	78	71	52	40	58	14
23	GA09054-16ES25	25	100	13	13	50	68	69	48	34	59	17
24	KWS095	13	70	12	20	50	68	58	41	13	61	31
25	KWS103	15	62	16	18	20	55	58	35	3	53	3
26	KWS114	10	67	17	30	50	63	64	43	19	60	25
27	KWS122	13	55	19	18	20	63	44	33	1	56	9
28	KWS133	33	78	15	23	40	70	60	45	25	59	17
29	KWS141	13	46	17	3	50	70	55	36	5	63	38
30	LA08265C-50	23	100	19	5	60	85	39	47	32	60	25
31	LA09101UB-48-3-5	20	97	11	5	60	63	61	45	25	58	14
32	LW08049C-74-2-5	5	100	18	5	50	68	48	42	16	57	11
33	LA10081C-18	18	100	14	13	45	78	71	48	34	60	25
34	LA11309GS-16	15	100	19	20	45	63	59	46	29	66	45
35	NC13-23443	95	96	20	8	50	65	50	55	43	63	38
36	NC13-21213	23	98	13	10	35	73	63	45	25	58	14
37	NC13-20332	40	87	17	20	65	85	74	55	43	66	45
38	NC14-23372	25	99	19	5	65	90	48	50	37	60	25
39	NC14-23373	8	73	12	3	45	80	54	39	9	65	43
40	VA13W-174	30	96	12	5	65	60	51	46	29	65	43
41	VA09MAS2-131-6-2	45	100	13	18	55	55	55	49	36	64	40
42	VA14W-32	8	100	17	3	85	78	65	51	39	59	17
43	VA07MAS1-7047-1-1-4-2	3	87	16	0	25	63	54	35	3	60	25
44	DH12SRW056-058	8	97	18	5	20	73	54	39	9	55	7
45	DH11SRW061-16	13	100	13	5	75	65	48	45	25	61	31
46	VA09MAS2-131-6-2-4	25	98	12	35	45	90	59	52	40	59	17
	Mean	24	88	15	12	45	71	57	45		59	
	LSD (0.05)	26	.	7	.	34	.	14	26		.	
	CV%	53.5	.	21.8	.	42.9	.	17.4	29.2		.	

FHB Severity (1-100)

	CULTIVAR/ DESIGNATION	N'PORT AR	RANK	GRIFFIN GA	RANK	KWS IL	RANK	LX'TON KY	RANK	WINNS LA	RANK	COL'BIA MO	RANK	WARSAW VA	RANK	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	42	44	50	23	8	10	23	1	10	3	13	24	12	6	23	12	26	6
2	COKER9835	100	46	69	37	50	46	41	21	50	43	22	46	44	42	54	46	51	46
3	BESS	7	7	8	1	3	3	48	32	28	36	9	5	18	16	17	3	23	3
4	JAMESTOWN	5	3	35	14	8	10	31	8	15	6	9	5	10	2	16	2	26	6
5	NC13-20076	3	1	37	15	13	17	54	39	18	14	14	30	11	4	21	8	22	1
6	VA13W-38	12	19	33	10	25	28	48	32	20	25	10	8	16	12	23	12	22	1
7	ARLA07133C-19-4	5	3	42	20	10	15	40	19	5	1	8	2	33	32	20	7	35	22
8	ARLA07133C-3-4	15	26	62	31	0	1	27	3	23	29	17	39	40	39	26	22	45	44
9	ARLA06146E-1-4	7	7	31	8	13	17	44	27	15	6	15	34	9	1	19	5	35	22
10	AR08109-17-2	13	24	14	2	25	28	58	43	18	14	13	24	38	36	26	22	34	20
11	AR08015-17-4	18	33	80	44	35	42	29	4	18	14	15	34	36	35	33	37	30	10
12	AR08057-5-1	20	37	80	44	30	41	34	12	28	36	10	8	35	34	34	42	41	39
13	LES15-5369	15	26	37	15	15	21	47	30	5	1	10	8	16	12	21	8	27	8
14	LES15-5499	15	26	25	5	13	17	45	29			11	19	52	46	26	24	36	25
15	LES15-5605	18	33	37	15	15	21	26	2	20	25	14	30	40	39	24	17	37	29
16	GA09343-16ES3	22	41	65	32	25	28	43	25	23	29	13	24	39	38	33	37	39	34
17	GA09410-16ES22	37	43	58	28	45	45	39	17	18	14	11	19	29	28	34	42	40	37
18	GA09129-16EL56	10	17	50	23	23	26	42	22	15	6	10	8	21	20	24	17	32	12
19	GA121176-16JS49	12	19	65	32	5	5	39	17	33	39	8	2	27	27	27	27	32	12
20	GA09163-16ES19	5	3	30	7	13	17	48	32	25	35	8	2	30	30	23	12	36	25
21	GA09144-16ES23	10	17	46	22	25	28	49	35	18	14	18	42	21	20	27	27	27	8
22	GA05450-16ES8	25	42	65	32	25	28	31	8	23	29	12	22	26	25	30	32	34	20
23	GA09054-16ES25	13	24	85	46	25	28	47	30	28	36	13	24	18	16	33	37	43	43
24	KWS095	8	14	50	23	25	28	33	11	15	6	13	24	34	33	25	20	36	25
25	KWS103	7	7	34	12	25	28	37	16	10	3	10	8	38	36	23	12	30	10
26	KWS114	7	7	33	10	40	44	61	44	60	45	10	8	47	44	37	45	39	34
27	KWS122	7	7	40	19	8	10	51	36	18	14	12	22	24	24	23	12	38	30
28	KWS133	12	19	42	20	25	28	35	14	15	6	13	24	46	43	27	27	36	25
29	KWS141	7	7	37	15	5	5	57	41	33	39	11	19	17	15	24	17	41	39
30	LA08265C-50	12	19	73	39	15	21	57	41	23	29	14	30	15	11	30	32	38	30
31	LA09101UB-48-3-5	8	14	54	27	15	21	29	4	13	5	10	8	19	19	21	8	33	17
32	LW08049C-74-2-5	7	7	50	23	10	15	61	44	15	6	10	8	47	44	29	30	33	17
33	LA10081C-18	3	1	58	28	23	26	43	25	20	25	17	39	14	10	25	20	32	12
34	LA11309GS-16	18	33	73	39	25	28	42	22	18	14	16	37	10	2	29	30	47	45
35	NC13-23443	80	45	27	6	25	28	52	37	18	14	9	5	21	20	33	37	35	22
36	NC13-21213	17	30	68	36	25	28	35	14	23	29	17	39	42	41	32	36	32	12
37	NC13-20332	18	33	34	12	20	25	42	22	23	29	18	42	29	28	26	24	40	37
38	NC14-23372	12	19	21	4	5	5	52	37	18	14	15	34	13	8	19	5	25	5
39	NC14-23373	5	3	15	3	5	5	34	12	15	6	16	37	13	8	15	1	32	12
40	VA13W-174	17	30	58	28	5	5	32	10	18	14	7	1	12	6	21	8	39	34
41	VA09MAS2-131-6-2	20	37	73	39	28	40	30	6	35	41	10	8	22	23	31	34	38	30
42	VA14W-32	20	37	76	42	3	3	56	40	50	43	19	44	31	31	36	44	33	17
43	VA07MAS1-7047-1-1-4-2	15	26	31	8	0	1	40	19	15	6	10	8	11	4	17	3	41	39
44	DH12SRW056-058	8	14	69	37	8	10	44	27	20	25	14	30	18	16	26	24	24	4
45	DH11SRW061-16	17	30	79	43	8	10	62	46	40	42	10	8	16	12	33	37	38	30
46	VA09MAS2-131-6-2-4	20	37	66	35	35	42	30	6	18	14	21	45	26	25	31	34	41	39
	Mean	17		49		18		42		22		13		26		27		35	
	LSD (0.05)	14		.		.		27		13		.		12		24		.	
	CV%	50.1		.		.		32.2		35.0		.		32.3		46.4		.	

FHB Index (1-100)

	CULTIVAR/ DESIGNATION	N'PORT AR	RANK	GRIFFIN GA	RANK	LEX'TON KY	RANK	WINNS LA	RANK	COL'BIA MO	RANK	B'BURG VA	RANK	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	21	44	45	23	2	1	2	4	10	32	4	1	14	21	15	3
2	COKER9835	100	46	68	38	5	11	45	45	20	46	33	#	45	46	43	46
3	BESS	0	1	4	1	8	30	16	37	6	10	9	#	7	1	13	1
4	JAMESTOWN	1	7	34	20	3	2	9	25	7	14	5	2	10	6	17	6
5	NC13-20076	0	1	37	22	10	38	3	6	10	29	7	9	11	11	13	1
6	VA13W-38	4	29	33	18	9	34	6	14	6	12	8	#	11	11	15	3
7	ARLA07133C-19-4	1	7	23	10	6	17	2	2	5	3	21	#	10	6	22	13
8	ARLA07133C-3-4	5	33	54	28	4	4	7	15	14	42	29	#	19	31	30	42
9	ARLA06146E-1-4	1	7	30	16	6	17	8	17	12	35	5	2	10	6	25	24
10	AR08109-17-2	2	18	11	2	7	24	5	12	11	33	23	#	10	6	22	13
11	AR08015-17-4	4	29	80	45	4	4	3	5	12	36	20	#	21	37	19	7
12	AR08057-5-1	7	37	78	43	5	11	11	28	6	9	19	#	21	37	27	33
13	LES15-5369	5	33	27	14	7	24	1	1	7	17	10	#	9	4	21	11
14	LES15-5499	3	24	13	4	7	24			7	19	29	#	11	11	25	24
15	LES15-5605	8	40	23	10	5	11	12	30	9	26	17	#	12	16	26	30
16	GA09343-16ES3	7	37	63	33	7	24	17	38	8	22	24	#	21	37	27	33
17	GA09410-16ES22	20	43	55	29	8	30	4	7	10	31	20	#	20	32	27	33
18	GA09129-16EL56	1	7	50	25	6	17	4	9	7	13	13	#	13	18	22	13
19	GA121176-16JS49	2	18	65	34	5	11	26	41	5	2	21	#	21	37	21	11
20	GA09163-16ES19	0	1	25	12	9	34	12	31	5	5	18	#	12	16	25	24
21	GA09144-16ES23	2	18	45	23	9	34	8	19	12	38	12	#	15	24	22	13
22	GA05450-16ES8	10	42	62	32	6	17	14	33	9	27	19	#	20	32	22	13
23	GA09054-16ES25	3	24	85	46	6	17	14	33	9	23	12	#	22	42	29	41
24	KWS095	1	7	35	21	4	4	8	20	9	24	20	#	13	18	25	24
25	KWS103	1	7	21	7	6	17	2	3	5	4	23	#	10	6	19	7
26	KWS114	1	7	22	8	10	38	30	42	6	8	29	#	16	25	26	30
27	KWS122	1	7	22	8	10	38	4	7	8	21	11	#	9	4	24	22
28	KWS133	4	29	33	18	5	11	6	13	9	25	28	#	14	21	22	13
29	KWS141	1	7	17	5	10	38	18	39	8	20	10	#	11	11	30	42
30	LA08265C-50	3	24	73	39	11	45	14	33	12	34	6	4	20	32	27	33
31	LA09101UB-48-3-5	2	18	52	27	3	2	7	15	6	7	11	#	13	18	24	22
32	LW08049C-74-2-5	0	1	50	25	11	45	9	22	7	18	23	#	17	29	23	20
33	LA10081C-18	1	7	58	31	7	24	9	25	13	40	10	#	16	25	23	20
34	LA11309GS-16	3	24	73	39	8	30	8	20	10	30	6	4	18	30	34	45
35	NC13-23443	76	45	26	13	10	38	9	22	6	11	11	#	23	43	25	24
36	NC13-21213	4	29	67	37	5	11	8	17	12	37	26	#	20	32	19	7
37	NC13-20332	7	37	30	16	7	24	15	36	16	44	21	#	16	25	30	42
38	NC14-23372	3	24	20	6	10	38	13	32	14	41	6	4	11	11	20	10
39	NC14-23373	0	1	11	2	4	4	9	22	13	39	7	9	7	1	25	24
40	VA13W-174	5	33	56	30	4	4	11	29	4	1	6	4	14	21	27	33
41	VA09MAS2-131-6-2	9	40	73	39	4	4	19	40	7	16	12	#	21	37	27	33
42	VA14W-32	2	18	76	42	10	38	42	44	15	43	20	#	27	45	22	13
43	VA07MAS1-7047-1-1-4-2	0	1	27	14	6	17	4	10	6	6	6	4	8	3	28	39
44	DH12SRW056-058	1	7	66	36	8	30	4	10	10	28	9	#	16	25	15	3
45	DH11SRW061-16	2	18	79	44	9	34	31	43	7	15	8	#	23	43	26	30
46	VA09MAS2-131-6-2-4	5	33	65	34	4	4	11	27	19	45	15	#	20	32	28	39
	Mean	7		45		7		11		9		15		16		24	
	LSD (0.05)	12		.		6		12		.		9		24		.	
	CV%	81.5		.		42.8		59.8		.		41.4		77.9		.	

Percent Fusarium Damaged Kernels

	CULTIVAR/ DESIGNATION	N'PORT AR	RANK	F'VILLE AR	RANK	GRIFFIN GA	RANK	LEX'TON KY	RANK	WINNS LA	RANK	COL'BIA MO	RANK	WARSAW VA	RANK	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	11	13	60	37	60	23	30	15	10	1	8	7	18	3	28	13	23	6
2	COKER9835	97	46	96	46	78	38	63	43	85	46	30	45	46	44	71	46	46	46
3	BESS	7	5	3	2	21	1	18	1	10	1	10	19	18	3	12	1	17	1
4	JAMESTOWN	6	4	7	6	53	20	30	15	15	3	8	7	25	13	21	3	20	3
5	NC13-20076	4	1	6	5	56	22	25	5	35	21	8	7	18	3	22	5	17	1
6	VA13W-38	58	41	89	44	53	20	25	5	25	7	8	7	27	17	41	37	20	3
7	ARLA07133C-19-4	13	16	8	9	38	8	35	20	35	21	8	7	28	21	24	7	30	18
8	ARLA07133C-3-4	8	10	53	34	66	27	45	33	35	21	10	19	31	29	35	26	35	35
9	ARLA06146E-1-4	24	26	28	22	50	18	28	10	25	7	18	39	16	1	27	11	35	35
10	AR08109-17-2	7	5	17	16	33	5	38	25	30	12	10	19	27	17	23	6	31	21
11	AR08015-17-4	35	30	6	4	86	45	50	37	40	31	10	19	32	33	37	29	32	24
12	AR08057-5-1	65	45	39	27	84	43	45	33	35	21	5	1	28	21	43	39	37	44
13	LES15-5369	30	28	30	23	43	11	43	31	35	21	13	30	23	10	31	19	25	9
14	LES15-5499	28	27	43	29	28	2	38	25	35	21	10	19	19	6	29	16	33	30
15	LES15-5605	40	35	28	21	38	8	40	29	30	12	5	1	25	13	29	16	29	15
16	GA09343-16ES3	60	43	63	41	74	33	70	46	65	43	15	36	51	46	57	45	36	40
17	GA09410-16ES22	33	29	30	23	67	29	53	39	35	21	25	43	39	41	40	34	36	40
18	GA09129-16EL56	17	21	37	26	65	25	33	19	30	12	10	19	30	27	32	23	27	10
19	GA121176-16JS49	22	22	45	30	75	34	30	15	75	45	20	41	49	45	45	42	35	35
20	GA09163-16ES19	15	18	27	20	44	12	35	20	45	41	8	7	20	7	28	13	33	30
21	GA09144-16ES23	23	25	12	12	61	24	35	20	30	12	13	30	40	43	31	19	24	8
22	GA05450-16ES8	57	40	33	25	73	32	68	45	40	31	10	19	33	34	45	42	35	35
23	GA09054-16ES25	15	18	15	14	89	46	55	40	35	21	25	43	31	29	38	30	36	40
24	KWS095	47	36	8	9	50	18	38	25	35	21	20	41	33	34	33	24	32	24
25	KWS103	12	15	4	3	37	6	45	33	20	4	8	7	39	41	24	7	31	21
26	KWS114	37	34	45	30	39	10	45	33	30	12	10	19	37	40	35	26	28	12
27	KWS122	5	2	2	1	37	6	28	10	30	12	5	1	16	1	18	2	33	30
28	KWS133	47	36	20	17	49	17	40	29	40	31	18	39	24	12	34	25	30	18
29	KWS141	22	22	12	11	32	4	28	10	30	12	5	1	21	8	21	3	34	33
30	LA08265C-50	10	12	7	6	81	39	30	15	40	31	15	36	31	29	31	19	27	10
31	LA09101UB-48-3-5	22	22	47	32	66	27	25	5	25	7	8	7	25	13	31	19	29	15
32	LW08049C-74-2-5	5	2	13	13	65	25	35	20	25	7	8	7	22	9	25	9	28	12
33	LA10081C-18	7	7	60	37	71	31	58	42	40	31	15	36	26	16	40	34	32	24
34	LA11309GS-16	13	17	62	40	81	39	28	10	40	31	13	30	29	25	38	30	38	45
35	NC13-23443	47	36	79	43	47	15	20	2	25	7	8	7	28	21	36	28	30	18
36	NC13-21213	37	33	73	42	77	37	50	37	30	12	40	46	29	25	48	44	28	12
37	NC13-20332	35	30	55	35	48	16	63	43	20	4	13	30	34	37	38	30	32	24
38	NC14-23372	17	20	22	18	44	12	38	25	40	31	10	19	23	10	28	13	22	5
39	NC14-23373	8	9	47	32	30	3	28	10	35	21	5	1	27	17	26	10	29	15
40	VA13W-174	62	44	92	45	68	30	25	5	20	4	8	7	35	38	44	41	36	40
41	VA09MAS2-131-6-2	35	30	57	36	81	39	25	5	40	31	10	19	36	39	41	37	32	24
42	VA14W-32	12	14	40	28	83	42	55	40	70	44	8	7	33	34	43	39	32	24
43	VA07MAS1-7047-1-1-4-2	58	41	60	37	46	14	23	4	40	31	10	19	28	21	38	30	35	35
44	DH12SRW056-058	8	8	7	6	76	36	35	20	30	12	5	1	31	29	27	11	23	6
45	DH11SRW061-16	8	10	16	15	85	44	20	2	40	31	13	30	27	17	30	18	31	21
46	VA09MAS2-131-6-2-4	48	39	26	19	75	34	43	31	45	41	13	30	30	27	40	34	34	33
	Mean	28		35		59		38		35		12		29		34		30	
	LSD (0.05)	22		51		.		15		.		.		.		28		.	
	CV%	48.2		50.7		.		27.4		.		.		.		42.2		.	

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

	CULTIVAR/ DESIGNATION	N'PORT AR	RANK	Griffin IL	RANK	LX'TON KY	RANK	WINNS LA	RANK	COL'BIA MO	RANK	WARSAW VA	RANK	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	18	28	60	23	22	1	14	1	30	26	22	1	28	7	31	5
2	COKER9835	69	46	78	38	41	41	76	45	46	46	37	24	61	46	55	46
3	BESS	4	3	21	1	26	7	30	20	27	17	46	42	23	1	27	1
4	JAMESTOWN	4	3	53	20	24	5	27	13	25	8	27	3	27	4	32	6
5	NC13-20076	3	1	56	22	32	22	25	8	30	26	43	37	29	10	28	3
6	VA13W-38	22	36	53	20	30	15	27	12	25	8	36	22	31	16	27	1
7	ARLA07133C-19-4	6	12	38	8	30	15	25	7	23	2	51	45	27	4	38	14
8	ARLA07133C-3-4	7	17	66	27	30	15	30	19	35	38	50	44	36	29	44	40
9	ARLA06146E-1-4	15	27	50	18	28	10	30	17	35	38	40	30	31	16	43	35
10	AR08109-17-2	6	12	33	5	36	34	26	11	34	35	32	14	29	10	36	9
11	AR08015-17-4	21	34	86	45	33	24	26	10	33	34	44	39	40	36	38	14
12	AR08057-5-1	31	44	84	43	33	24	31	22	24	4	48	43	40	36	42	33
13	LES15-5369	12	24	43	11	36	34	19	3	29	24	32	14	29	10	36	9
14	LES15-5499	11	23	28	2	34	28			28	19	41	34	28	7	39	18
15	LES15-5605	21	34	38	9	29	11	32	25	25	8	32	14	30	14	40	21
16	GA09343-16ES3	26	41	74	33	46	46	55	42	29	24	37	24	47	45	44	40
17	GA09410-16ES22	23	39	67	29	39	38	25	8	38	43	27	3	40	36	43	35
18	GA09129-16EL56	3	1	65	25	30	15	24	5	27	17	45	41	31	16	37	13
19	GA121176-16JS49	12	24	75	34	27	9	64	43	28	19	25	2	43	43	39	18
20	GA09163-16ES19	4	3	44	12	34	28	41	36	24	4	34	18	30	14	41	30
21	GA09144-16ES23	6	12	61	24	34	28	29	15	31	28	28	7	34	23	36	9
22	GA05450-16ES8	27	42	73	32	42	43	39	35	31	28	31	12	42	42	40	21
23	GA09054-16ES25	10	22	89	46	40	39	37	34	34	35	33	17	41	40	43	35
24	KWS095	18	28	50	18	29	11	34	28	32	31	39	29	34	23	40	21
25	KWS103	7	17	37	6	34	28	17	2	22	1	30	9	27	4	38	14
26	KWS114	22	36	39	10	41	41	45	40	26	13	42	36	37	30	40	21
27	KWS122	5	9	37	6	32	22	23	4	24	4	38	28	25	2	40	21
28	KWS133	20	32	49	17	31	21	33	26	32	31	40	30	34	23	38	14
29	KWS141	12	24	32	4	33	24	37	32	26	13	27	3	28	7	43	35
30	LA08265C-50	6	12	81	39	35	33	41	37	36	40	36	22	38	33	41	30
31	LA09101UB-48-3-5	9	21	66	27	22	1	32	23	25	8	54	46	31	16	39	18
32	LW08049C-74-2-5	4	3	65	25	38	37	30	17	26	13	44	39	33	21	36	9
33	LA10081C-18	4	3	71	31	40	39	36	31	34	35	31	12	37	30	40	21
34	LA11309GS-16	5	9	81	40	29	11	35	30	28	19	37	24	35	28	47	45
35	NC13-23443	43	45	47	15	29	11	30	20	25	8	40	30	34	23	40	21
36	NC13-21213	22	36	77	37	34	28	29	15	43	45	37	24	41	40	35	8
37	NC13-20332	19	31	48	16	43	44	34	29	36	40	34	18	37	30	45	44
38	NC14-23372	8	20	44	12	36	34	41	37	36	40	43	37	32	20	34	7
39	NC14-23373	4	3	30	3	25	6	32	24	31	28	30	9	25	2	40	21
40	VA13W-174	27	42	68	30	23	3	33	27	23	2	28	7	34	23	44	40
41	VA09MAS2-131-6-2	18	28	81	40	23	3	43	39	24	4	27	3	38	33	44	40
42	VA14W-32	7	17	83	42	44	45	69	44	32	31	30	9	46	44	40	29
43	VA07MAS1-7047-1-1-4	20	32	46	14	26	7	28	14	26	13	40	30	29	10	42	33
44	DH12SRW056-058	5	9	76	36	33	24	24	5	28	19	41	34	33	21	29	4
45	DH11SRW061-16	6	12	85	44	30	15	51	41	28	19	34	18	38	35	43	35
46	VA09MAS2-131-6-2-4	25	40	75	34	30	15	37	32	38	43	34	18	40	36	41	30
	Mean	15		59		33		34		30		37		34		39	
	LSD (0.05)	14		.		8		.		.		.		19		.	
	CV%	45.3		.		18		.		.		.		28.6		.	

SEVERITY MEASURED IN GREENHOUSE

	CULTIVAR/ DESIGNATION	COL'BIA MO	*RANK*
1	ERNIE	7	*4*
2	COKER9835	34	*44*
3	BESS	8	*12*
4	JAMESTOWN	20	*35*
5	NC13-20076	8	*12*
6	VA13W-38	10	*25*
7	ARLA07133C-19-4	9	*20*
8	ARLA07133C-3-4	25	*41*
9	ARLA06146E-1-4	6	*2*
10	AR08109-17-2	12	*30*
11	AR08015-17-4	38	*45*
12	AR08057-5-1	7	*4*
13	LES15-5369	10	*25*
14	LES15-5499	7	*4*
15	LES15-5605	9	*20*
16	GA09343-16ES3	20	*35*
17	GA09410-16ES22	20	*35*
18	GA09129-16EL56	22	*38*
19	GA121176-16JS49	9	*20*
20	GA09163-16ES19	9	*20*
21	GA09144-16ES23	12	*30*
22	GA05450-16ES8	11	*29*
23	GA09054-16ES25	22	*38*
24	KWS095	28	*43*
25	KWS103	8	*12*
26	KWS114	26	*42*
27	KWS122	7	*4*
28	KWS133	7	*4*
29	KWS141	5	*1*
30	LA08265C-50	16	*34*
31	LA09101UB-48-3-5	7	*4*
32	LW08049C-74-2-5	14	*32*
33	LA10081C-18	24	*40*
34	LA11309GS-16	8	*12*
35	NC13-23443	8	*12*
36	NC13-21213	10	*25*
37	NC13-20332	7	*4*
38	NC14-23372	14	*32*
39	NC14-23373	7	*4*
40	VA13W-174	6	*2*
41	VA09MAS2-131-6-2	8	*12*
42	VA14W-32	73	*46*
43	VA07MAS1-7047-1-1-4-2	9	*20*
44	DH12SRW056-058	8	*12*
45	DH11SRW061-16	10	*25*
46	VA09MAS2-131-6-2-4	8	*12*
	Mean	14	

GRAIN YIELD

	CULTIVAR/ DESIGNATION	WARSAW VA bu / ac	RANK	WARSAW VA lb / bu	RANK
1	ERNIE	69	40	56.8	45
2	COKER9835	58	46	56.1	46
3	BESS	71	35	59.7	25
4	JAMESTOWN	67	42	60.5	13
5	NC13-20076	72	34	60.4	15
6	VA13W-38	69	40	59.7	25
7	ARLA07133C-19-4	80	18	60.5	13
8	ARLA07133C-3-4	66	43	58.4	40
9	ARLA06146E-1-4	86	8	60.0	22
10	AR08109-17-2	76	26	60.2	19
11	AR08015-17-4	66	43	60.8	11
12	AR08057-5-1	78	24	59.3	33
13	LES15-5369	85	10	59.5	31
14	LES15-5499	90	5	61.5	3
15	LES15-5605	76	26	59.7	25
16	GA09343-16ES3	81	16	59.7	25
17	GA09410-16ES22	64	45	57.9	44
18	GA09129-16EL56	86	8	60.9	10
19	GA121176-16JS49	83	13	59.1	36
20	GA09163-16ES19	85	10	61.5	3
21	GA09144-16ES23	70	37	59.2	35
22	GA05450-16ES8	80	18	60.1	21
23	GA09054-16ES25	78	24	61.6	2
24	KWS095	70	37	58.9	37
25	KWS103	94	4	58.8	38
26	KWS114	95	2	59.8	24
27	KWS122	96	1	60.4	15
28	KWS133	95	2	59.3	33
29	KWS141	80	18	61.2	8
30	LA08265C-50	83	13	61.3	5
31	LA09101UB-48-3-5	76	26	58.3	42
32	LW08049C-74-2-5	75	30	61.3	5
33	LA10081C-18	71	35	59.5	31
34	LA11309GS-16	73	33	60.3	18
35	NC13-23443	70	37	59.7	25
36	NC13-21213	80	18	60.2	19
37	NC13-20332	80	18	59.7	25
38	NC14-23372	76	26	61.8	1
39	NC14-23373	74	31	61.3	5
40	VA13W-174	88	6	59.9	23
41	VA09MAS2-131-6-2	81	16	58.0	43
42	VA14W-32	74	31	58.5	39
43	VA07MAS1-7047-1-1-4-2	79	23	60.7	12
44	DH12SRW056-058	84	12	60.4	15
45	DH11SRW061-16	87	7	61.2	8
46	VA09MAS2-131-6-2-4	82	15	58.4	40
	Mean	78		59.8	

DON
(ppm)

	CULTIVAR/ DESIGNATION	N'PORT AR	RANK	B'BURG VA	RANK	LEX'TON KY	RANK	W'BORO LA	RANK	MEAN ALL LOC.	RANK	GEBV	RANK
1	ERNIE	1.7	18	0.6	2	17	18	11	12	8	12	8	10
2	COKER9835	5.7	46	3.2	43	24	35	13	19	11	27	15	46
3	BESS	2.2	24	1.1	13	17	18	6	3	7	7	8	10
4	JAMESTOWN	0.9	4	0.8	5	15	8	6	4	6	1	6	2
5	NC13-20076	0.7	3	0.4	1	14	3	8	8	6	1	5	1
6	VA13W-38	1.8	20	1.4	20	15	8	14	20	8	12	7	6
7	ARLA07133C-19-4	1.7	18	1.7	29	23	33	16	25	11	27	11	24
8	ARLA07133C-3-4	1.6	17	2.2	34	19	25	13	17	9	17	13	37
9	ARLA06146E-1-4	1.9	21	0.8	5	19	25	8	7	7	7	11	24
10	AR08109-17-2	2.1	22	1.8	32	18	21	16	22	9	17	11	24
11	AR08015-17-4	4.8	42	2.2	34	20	28	25	38	13	36	13	37
12	AR08057-5-1	5.0	44	2.9	41	18	21	11	13	9	17	12	34
13	LES15-5369	2.1	22	1.3	18	16	13	5	1	6	1	6	2
14	LES15-5499	2.9	32	1.8	32	14	3	16	23	9	17	8	10
15	LES15-5605	3.5	37	0.9	10	22	31	21	32	12	31	8	10
16	GA09343-16ES3	3.9	39	3.1	42	29	42	23	35	15	41	13	37
17	GA09410-16ES22	2.3	27	5.3	45	27	40	26	41	15	41	13	37
18	GA09129-16EL56	1.1	6	1.6	24	21	29	13	18	9	17	9	16
19	GA121176-16JS49	1.0	5	3.4	44	21	29	15	21	10	25	9	16
20	GA09163-16ES19	2.6	31	5.6	46	32	44	26	40	16	43	12	34
21	GA09144-16ES23	1.1	6	1.6	24	17	18	27	43	12	31	6	2
22	GA05450-16ES8	3.8	38	2.6	39	33	46	23	36	16	43	11	24
23	GA09054-16ES25	1.1	6	1.1	13	24	35	17	27	11	27	13	37
24	KWS095	4.0	40	1.6	24	16	13	8	9	8	12	11	24
25	KWS103	2.2	24	1.7	29	14	3	9	11	7	7	10	21
26	KWS114	5.0	44	2.8	40	16	13	25	39	12	31	11	24
27	KWS122	1.1	6	0.8	5	9	1	17	28	7	7	12	34
28	KWS133	4.9	43	2.2	34	19	25	22	34	12	31	11	24
29	KWS141	2.9	32	1.5	22	14	3	19	30	9	17	11	24
30	LA08265C-50	1.5	14	0.9	10	15	8	13	16	7	7	7	6
31	LA09101UB-48-3-5	1.4	11	1.0	12	18	21	5	2	6	1	11	24
32	LW08049C-74-2-5	0.6	1	1.6	24	18	21	12	15	8	12	10	21
33	LA10081C-18	1.5	14	1.3	18	29	42	20	31	13	36	10	21
34	LA11309GS-16	0.6	1	1.1	13	13	2	9	10	6	1	13	37
35	NC13-23443	2.5	30	0.8	5	15	8	7	5	6	1	8	10
36	NC13-21213	2.3	27	1.4	20	15	8	12	14	8	12	7	6
37	NC13-20332	2.9	32	1.6	24	32	44	8	6	11	27	9	16
38	NC14-23372	3.1	36	0.7	3	16	13	17	26	9	17	6	2
39	NC14-23373	1.5	14	0.7	3	23	33	27	42	13	36	8	10
40	VA13W-174	1.2	10	0.8	5	16	13	16	24	9	17	13	37
41	VA09MAS2-131-6-2	3.0	35	1.5	22	25	37	18	29	12	31	11	24
42	VA14W-32	2.3	27	1.7	29	27	40	36	45	17	45	9	16
43	VA07MAS1-7047-1-1-4-2	1.4	11	1.2	17	25	37	28	44	14	40	13	37
44	DH12SRW056-058	2.2	24	2.5	38	22	31	25	37	13	36	7	6
45	DH11SRW061-16	1.4	11	2.4	37	14	3	21	33	10	25	9	16
46	VA09MAS2-131-6-2-4	4.4	41	1.1	13	26	39	41	46	18	46	14	45
	Mean	2.4		1.7		19.8		16.8		10.2			
	LSD (0.05)	.		.		.		.					
	CV%	.		.		.		.					

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_1A_Neuse	Fhb_2B_Bess	Fhb_3B_Bess	Fhb_4A_Neuse	Fhb_6A_Neuse	Fhb_1B_Jamestown	Fhb_6A_Jamestown
1	ERNIE	Rht-B1b	no	no	yes	yes	no	no	yes	no	no	no	yes	no	no
2	COKER9835	no	Rht-D1b	no	no	no	no	ND	no	no	no	yes	no	no	no
3	BESS	Rht-B1b	no	no	no	no	no	no	yes	yes	yes	no	no	yes	no
4	JAMESTOWN	no	Rht-D1b	no	no	no	no	no	yes	no	no	no	no	yes	yes
5	NC13-20076	?	Rht-D1b	no	no	no	no	no	het	no	no	no	ND	no	no
6	VA13W-38	Rht-B1b	no	no	no	no	no	no	no	no	no	no	no	yes	yes
7	ARLA07133C-19-4	no	Rht-D1b	no	no	no	no	no	no	no	no	no	no	yes	no
8	ARLA07133C-3-4	no	Rht-D1b	no	no	no	no	no	het	no	no	no	no	no	no
9	ARLA06146E-1-4	no	no	no	no	no	no	no	yes	no	no	no	no	yes	yes
10	AR08109-17-2	ND	Rht-D1b	no	no	no	no	no	no	no	no	no	het	no	no
11	AR08015-17-4	Rht-B1b	no	no	no	no	no	no	no	no	no	no	no	no	no
12	AR08057-5-1	no	Rht-D1b	no	no	no	no	no	no	no	no	no	no	no	het
13	LES15-5369	no	Rht-D1b	no	yes	no	no	no	yes	no	no	no	no	no	no
14	LES15-5499	no	Rht-D1b	no	no	no	no	no	yes	no	no	yes	no	yes	no
15	LES15-5605	no	Rht-D1b	no	no	no	no	no	yes	no	no	no	no	yes	no
16	GA09343-16ES3	no	Rht-D1b	no	no	no	no	no	no	no	no	no	no	no	no
17	GA09410-16ES22	no	Rht-D1b	no	no	no	no	no	no	no	no	het	no	no	no
18	GA09129-16EL56	no	Rht-D1b	no	no	no	no	no	yes	no	no	yes	no	yes	het
19	GA121176-16JS49	no	Rht-D1b	no	no	no	no	no	no	no	no	no	no	yes	yes
20	GA09163-16ES19	no	Rht-D1b	no	no	no	no	no	no	no	no	yes	no	no	yes
21	GA09144-16ES23	no	Rht-D1b	no	no	ND	ND	ND	het	no	no	het	no	no	het
22	GA05450-16ES8	no	Rht-D1b	no	no	no	no	no	no	no	no	no	no	no	no
23	GA09054-16ES25	no	Rht-D1b	no	no	no	no	no	het	no	no	no	no	het	het
24	KWS095	no	Rht-D1b	Fhb1	no	no	no	no	no	no	no	no	no	no	no
25	KWS103	Rht-B1b	no	no	het	no	no	no	yes	no	no	yes	yes	no	no
26	KWS114	Rht-B1b	no	no	no	no	no	no	yes	no	no	yes	yes	no	no
27	KWS122	no	Rht-D1b	no	no	no	no	no	yes	no	het	no	yes	no	no
28	KWS133	Rht-B1b	no	no	no	no	no	no	yes	no	no	yes	yes	no	no
29	KWS141	Rht-B1b	no	no	Yes	no	no	no	yes	no	no	yes	no	yes	no
30	LA08265C-50	no	Rht-D1b	no	no	no	no	no	yes	no	no	yes	no	yes	no
31	LA09101UB-48-3-5	no	Rht-D1b	ND	no	no	no	ND	yes	no	no	yes	no	yes	no
32	LW08049C-74-2-5	no	Rht-D1b	no	no	no	no	no	no	no	no	?	no	no	no
33	LA10081C-18	no	Rht-D1b	no	no	no	no	no	yes	no	no	yes	no	no	no
34	LA11309GS-16	no	Rht-D1b	no	no	no	no	no	yes	no	no	no	yes	no	no
35	NC13-23443	Rht-B1b	Rht-D1a	no	no	no	no	no	no	no	no	no	no	yes	no
36	NC13-21213	ND	ND	no	no	no	no	no	yes	no	no	yes	het	het	no
37	NC13-20332	no	Rht-D1b	no	no	no	no	no	yes	no	no	yes	no	yes	het
38	NC14-23372	no	Rht-D1b	Fhb1	no	yes	no	no	yes	no	no	no	yes	yes	no
39	NC14-23373	no	Rht-D1b	Fhb1	no	no	no	no	yes	no	no	het	yes	yes	no
40	VA13W-174	no	Rht-D1b	no	no	no	no	no	yes	no	no	no	het	yes	no
41	VA09MAS2-131-6-2	Rht-B1b	no	no	no	no	no	no	yes	no	no	no	no	no	no
42	VA14W-32	no	Rht-D1b	no	no	no	no	no	no	no	no	yes	no	no	no
43	VA07MAS1-7047-1-1-4-2	Rht-B1b	no	no	het	no	no	no	no	no	no	no	no	yes	yes
44	DH12SRW056-058	Rht-B1b	no	no	yes	no	no	no	no	no	no	no	no	yes	no
45	DH11SRW061-16	no	Rht-D1b	no	no	no	no	no	no	no	no	yes	no	no	no
46	VA09MAS2-131-6-2-4	Rht-B1b	no	no	no	no	no	no	yes	no	no	no	no	no	no

Efficacy of Selected FHB Resistance QTL

Mean Incidence, Severity, Fusarium Damaged Kernels (FDK), and DON for entries in the 2013-2017 Uniform Southern Winter Wheat Scab Nurseries with and without resistance alleles at quantitative trait loci (QTL) associated with resistance to (FHB).

QTL†	Allele‡	n§	INC		SEV		FDK		DON	
Qfhb.nc-2B.1 (Bess)	S	203	55.2	p=0.3988	31.5	p=0.2513	32.6	p=0.0093	10.9	p<0.0001
	R	32	53.9		30.2		29.1		7.5	
Qfhb.nc-3B.2 (Bess)	S	227	55.4	p=0.0040	31.6	p<0.0001	32.5	p=0.0002	10.5	p=0.4373
	R	11	50.2		25.9		26.0		10.0	
Ning_5A	S	233	55.2	p=0.3102	31.5	p=0.0094	32.4	p<0.0001	10.6	p<0.0001
	R	7	52.7		27.2		23.1		4.9	
Ernie_5A	S	220	54.6	p<0.0001	30.8	p<0.0001	31.4	p<0.0001	10.3	p=0.0004
	R	18	60.6		36.9		39.8		12.2	
Wuhan-1_2DL	S	234	55.2	p=0.5284	31.5	p=0.0080	32.3	p<0.0001	10.5	p<0.0001
	R	6	56.9		26.6		21.4		4.6	
Sumai 3_Fhb1	S	211	55.1	p=0.2917	32.1	p<0.0001	32.8	p=0.0002	11.0	p<0.0001
	R	26	56.6		27.9		28.3		7.5	
QTL_3BL (Massey)	S	221	55.4	p=0.5572	31.5	p=0.6617	31.9	p=0.1026	10.4	p=0.3569
	R	18	54.5		31.0		34.2		9.8	
QTL_1A (Neuse)	S	106	55.7	p=0.2101	32.7	p<0.0001	33.8	p<0.0001	11.4	p<0.0001
	R	117	54.7		30.3		30.4		9.6	
QTL_4A (Neuse)	S	94	51.0	p=0.1096	29.5	p=0.1333	30.7	p=0.4216	11.2	p=0.4346
	R	95	53.0		30.7		31.5		10.8	
QTL_6A (Neuse)	S	134	53.8	p=0.0673	30.5	p=0.1508	32.2	p=0.9178	11.4	p=0.0005
	R	91	57.0		32.3		32.1		9.1	
QTL_1B (Jamestown)	S	79	52.0	p=0.2204	29.8	p<0.0001	34.9	p=0.0024	12.2	p<0.0001
	R	51	50.7		25.9		31.6		9.8	
QTL_6A (Jamestown)	S	116	51.67	p=0.1669	28.39	p=0.2986	33.8	p=0.6832	11.02	p=0.2376
	R	14	49.58		27.11		33.15		11.82	

Heading Date (Julian Days*)

	CULTIVAR/ DESIGNATION	W'BORO LA	COL'BIA MO	WARSAW VA	LEX'TON KY	KWS IL	MEAN ALL LOC.	Rank	GEBV	Rank
1	ERNIE	80	127	107	111	122	109	11	124	4
2	COKER9835	78	128	106	110	130	110	17	127	35
3	BESS	89	128	110	112	127	113	34	127	35
4	JAMESTOWN	77	120	100	110	121	106	2	124	4
5	NC13-20076	77	124	106	111	128	109	11	125	10
6	VA13W-38	82	125	103	115	123	109	11	122	1
7	ARLA07133C-19-4	86	124	110	111	123	111	24	126	19
8	ARLA07133C-3-4	82	122	105	112	123	109	11	127	35
9	ARLA06146E-1-4	79	127	106	111	127	110	17	126	19
10	AR08109-17-2	89	122	109	110	130	112	30	125	10
11	AR08015-17-4	88	127	109	114	125	112	30	128	44
12	AR08057-5-1	83	127	110	114	131	113	34	125	10
13	LES15-5369	100	122	106	112	126	113	34	126	19
14	LES15-5499	100	125	110	112	127	115	45	124	4
15	LES15-5605	100	125	108	113	126	114	42	125	10
16	GA09343-16ES3	80	126	106	112	130	111	24	126	19
17	GA09410-16ES22	81	126	101	113	131	110	17	127	35
18	GA09129-16EL56	80	125	101	110	126	108	8	125	10
19	GA121176-16JS49	77	117	102	111	120	105	1	124	4
20	GA09163-16ES19	79	125	108	113	126	110	17	126	19
21	GA09144-16ES23	80	122	101	114	125	108	8	126	19
22	GA05450-16ES8	84	124	106	114	130	111	24	127	35
23	GA09054-16ES25	77	122	100	111	120	106	2	126	19
24	KWS095	89	127	110	111	127	113	34	127	35
25	KWS103	93	128	110	115	123	114	42	125	10
26	KWS114	94	129	110	112	130	115	45	127	35
27	KWS122	93	128	108	113	130	114	42	129	46
28	KWS133	95	125	110	112	121	113	34	126	19
29	KWS141	83	127	109	112	128	112	30	126	19
30	LA08265C-50	80	127	107	112	130	111	24	126	19
31	LA09101UB-48-3-5	86	122	106	110	129	110	17	126	19
32	LW08049C-74-2-5	77	125	109	112	130	110	17	127	35
33	LA10081C-18	77	122	100	113	130	108	8	124	4
34	LA11309GS-16	75	124	103	113	121	107	5	123	3
35	NC13-23443	86	127	107	114	130	113	34	128	33
36	NC13-21213	92	127	108	101	128	111	24	124	4
37	NC13-20332	86	128	107	110	131	112	30	125	10
38	NC14-23372	84	127	110	112	130	113	34	126	19
39	NC14-23373	85	129	107	111	131	113	34	125	10
40	VA13W-174	76	122	104	111	121	107	5	127	35
41	VA09MAS2-131-6-2	90	120	104	113	121	109	11	126	19
42	VA14W-32	78	122	101	111	121	106	4	126	19
43	VA07MAS1-7047-1-1-	77	125	102	111	121	107	5	125	10
44	DH12SRW056-058	83	125	108	114	124	111	24	122	1
45	DH11SRW061-16	77	122	104	111	129	109	11	126	19
46	VA09MAS2-131-6-2-4	90	122	106	111	121	110	17	126	19
	Mean	84	125	106	112	126	110		126	
	LSD (0.05)	.	.	2.2	6.0	3				
	CV%	.	.	1.5	2.6	1.0				

*Days after December 31, 2016

Plant Height (in)

	CULTIVAR/ DESIGNATION	WARSAW VA	KWS IL	LEX'TON KY	MEAN ALL LOC.	RANK	GEBV	RANK		Early Spring WARSAW VA	RANK
1	ERNIE	30	34	36	33	9	32	2		11	12
2	COKER9835	27	33	35	32	4	32	2		14	38
3	BESS	34	40	37	37	41	37	46		10	4
4	JAMESTOWN	27	36	33	32	4	34	22		13	30
5	NC13-20076	33	40	37	37	41	34	22		13	30
6	VA13W-38	30	36	37	34	16	33	6		14	38
7	ARLA07133C-19-4	33	39	32	35	30	35	39		9	1
8	ARLA07133C-3-4	34	39	36	36	35	34	22		11	12
9	ARLA06146E-1-4	34	39	35	36	35	34	22		11	12
10	AR08109-17-2	32	37	32	34	16	33	6		12	22
11	AR08015-17-4	33	42	40	38	46	35	39		9	1
12	AR08057-5-1	33	43	35	37	41	33	6		11	12
13	LES15-5369	30	37	35	34	16	33	6		12	22
14	LES15-5499	31	38	33	34	16	32	2		10	4
15	LES15-5605	29	37	34	33	9	33	6		10	4
16	GA09343-16ES3	30	36	36	34	16	34	22		12	22
17	GA09410-16ES22	29	33	33	31	2	34	22		17	46
18	GA09129-16EL56	32	39	36	36	35	35	39		13	30
19	GA121176-16JS49	28	34	38	33	9	31	1		14	38
20	GA09163-16ES19	30	37	36	34	16	34	22		14	38
21	GA09144-16ES23	29	35	38	34	16	33	6		16	45
22	GA05450-16ES8	30	37	35	34	16	34	22		15	43
23	GA09054-16ES25	30	36	34	33	9	34	22		15	43
24	KWS095	34	41	33	36	35	33	6		10	4
25	KWS103	31	38	38	36	35	35	39		10	4
26	KWS114	35	41	37	37	41	34	22		10	4
27	KWS122	36	40	36	37	41	35	39		11	12
28	KWS133	32	36	37	35	30	34	22		9	1
29	KWS141	31	38	34	34	16	33	6		10	4
30	LA08265C-50	33	37	35	35	30	35	39		13	30
31	LA09101UB-48-3-5	30	37	34	34	16	34	22		12	22
32	LW08049C-74-2-5	30	41	35	35	30	34	22		13	30
33	LA10081C-18	30	37	34	34	16	34	22		14	38
34	LA11309GS-16	27	36	35	33	9	33	6		11	12
35	NC13-23443	31	41	35	36	35	33	6		11	12
36	NC13-21213	32	36	35	34	16	33	6		11	12
37	NC13-20332	32	33	31	32	4	33	6		13	30
38	NC14-23372	31	39	33	34	16	33	6		11	12
39	NC14-23373	33	36	34	34	16	33	6		12	22
40	VA13W-174	29	36	34	33	9	34	22		12	22
41	VA09MAS2-131-6-2	26	30	33	30	1	33	6		10	4
42	VA14W-32	27	33	32	31	2	34	22		13	30
43	VA07MAS1-7047-1-1	29	36	32	32	4	34	22		12	22
44	DH12SRW056-058	31	37	37	35	30	32	2		13	30
45	DH11SRW061-16	30	34	34	33	9	33	6		12	22
46	VA09MAS2-131-6-2-4	28	32	36	32	4	35	39		11	12
	Mean	31	37	35	34		34			12	
	LSD (0.05)	.	2	0.7							
	CV%	.	3	7.7	.	.	.				

Leaf Disease Ratings

	CULTIVAR/ DESIGNATION	Leaf Rust 0-9 KWS IL	Leaf Rust 0-100 W'RSAW VA	Leaf Rust Reaction 0-3 TNRJ VA	Leaf Rust Reaction 0-3 TFRTG VA	Powdery Mildew 0-9 W'RSAW VA	Stripe Rust 0-100 F'VILLE AR	Stripe Rust 0-100 KWS IL
1	ERNIE	6	6	3	3	2	84	5
2	COKER9835	4	4	3-	0;2	1	84	8
3	BESS	7	6	3	3-	3	55	5
4	JAMESTOWN	3	3	23;	23	3	3	3
5	NC13-20076	3	2	23;	23	0	0	3
6	VA13W-38	3	1	;1-	;1=	0	83	5
7	ARLA07133C-19-4	3	0	21;	21;Tr3	2	0	3
8	ARLA07133C-3-4	2	1	;1=	;1	0	0	4
9	ARLA06146E-1-4	2	0	;1=	;1Tr3	2	0	2
#	AR08109-17-2	4	1	23-;	1;/3	0	0	2
#	AR08015-17-4	6	6	3	3	0	0	3
#	AR08057-5-1	4	1	3;	3	3	0	3
#	LES15-5369	4	2	3/0;	3-	3	38	3
#	LES15-5499	2	1	2;	23	0	13	3
#	LES15-5605	4	4	3	32	1	17	3
#	GA09343-16ES3	3	1	;12	23;	1	26	4
#	GA09410-16ES22	3	0	0;	32	1	6	2
#	GA09129-16EL56	3	0	;1	21;Tr3	0	11	4
#	GA121176-16JS49	2	0	;1-	21;	1	1	2
#	GA09163-16ES19	2	1	;1	12;	0	0	3
#	GA09144-16ES23	2	3	;1=	21;	1	1	2
#	GA05450-16ES8	3	0	;12	12;	0	0	2
#	GA09054-16ES25	2	0	;1	1;	0	0	2
#	KWS095	6	6	3	32	5	0	3
#	KWS103	3	0	23;	3	0	5	4
#	KWS114	2	2	1;3	3	1	2	2
#	KWS122	2	1	3	0;/23	4	0	3
#	KWS133	2	1	;1	1;	0	0	4
#	KWS141	4	5	3	3	3	0	4
#	LA08265C-50	2	1	3	3	0	0	3
#	LA09101UB-48-3-5	2	2	;1-	3-	1	0	2
#	LW08049C-74-2-5	2	1	1;	1;Tr3	0	0	4
#	LA10081C-18	2	1	;1-Tr3	1;Tr3	2	1	4
#	LA11309GS-16	2	1	;1-	0;12	1	21	4
#	NC13-23443	3	1	2;	23	0	62	4
#	NC13-21213	2	1	;1-	21;	0	0	2
#	NC13-20332	2	1	2;	0;	0	0	2
#	NC14-23372	2	6	1;	21;	0	0	2
#	NC14-23373	2	6	1;	21;	0	1	3
#	VA13W-174	2	2	;1-/3	3-	0	75	3
#	VA09MAS2-131-6-2	2	2	0;	23	0	6	2
#	VA14W-32	2	4	1;	3	1	0	3
#	VA07MAS1-7047-1-1-4	2	3	1;	1-;	0	63	3
#	DH12SRW056-058	3	1	2;	23	1	17	3
#	DH11SRW061-16	2	1	3	0;12	0	0	2
#	VA09MAS2-131-6-2-4	2	3	;1=	3	1	7	3
	Mean	3	2	.	.	1	15	3
	LSD (0.05)	2	.	.	.	.	18	2
	CV%	28	.	.	.	.	73.6	26

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	0-16	0-18	0-18	0-17	0-16	*no*
2	COKER9835	0-17	0-16	0-19	0-18	0-20	*no*
3	BESS	0-18	0-17	0-17	0-18	0-22	*no*
4	JAMESTOWN	19-0	0-20	2-20	0-21	0-16	*no*
5	NC13-20076	20-0	18-1	16-0	0-18	0-17	*no*
6	VA13W-38	0-19	0-18	0-17	0-19	0-17	*no*
7	ARLA07133C-19-4	0-17	0-18	0-21	0-18	0-18	*no*
8	ARLA07133C-3-4	0-14	0-17	0-16	0-18	0-19	*no*
9	ARLA06146E-1-4	0-18	0-19	11-8	0-17	0-15	*no*
10	AR08109-17-2	0-20	0-17	0-19	0-20	0-16	*no*
11	AR08015-17-4	0-17	0-20	0-13	0-18	0-15	*no*
12	AR08057-5-1	0-18	0-18	0-16	0-17	0-15	*no*
13	LES15-5369	0-20	0-19	0-16	0-20	0-17	*no*
14	LES15-5499	0-21	0-17	0-19	0-18	0-23	*no*
15	LES15-5605	0-18	0-15	0-19	0-17	0-17	*no*
16	GA09343-16ES3	11-6	0-19	8-2	0-16	0-18	*no*
17	GA09410-16ES22	0-19	0-16	0-17	0-21	0-16	*Het*
18	GA09129-16EL56	15-0	16-0	19-0	0-18	0-17	*no*
19	GA121176-16JS49	19-0	15-3	14-3	0-18	0-16	*no*
20	GA09163-16ES19	0-21	0-18	0-16	0-13	0-11	*no*
21	GA09144-16ES23	8-8	0-17	0-13	0-20	0-17	*no*
22	GA05450-16ES8	0-14	0-15	0-18	0-18	0-21	*no*
23	GA09054-16ES25	18-0	19-0	18-0	17-0	21-0	*Yes*
24	KWS095	0-18	0-16	0-17	0-16	0-23	*no*
25	KWS103	9-8	0-17	0-19	0-17	0-19	*no*
26	KWS114	17-0	0-15	0-20	0-16	0-15	*no*
27	KWS122	0-17	0-18	0-17	0-20	0-17	*no*
28	KWS133	0-20	0-18	0-17	0-18	0-17	*no*
29	KWS141	9-11	0-20	0-20	0-18	0-19	*no*
30	LA08265C-50	0-17	0-16	0-19	20-0	0-16	*no*
31	LA09101UB-48-3-5	7-10	0-16	0-13	0-16	0-13	*no*
32	LW08049C-74-2-5	0-16	0-19	0-17	0-19	0-18	*no*
33	LA10081C-18	0-13	0-18	0-16	0-18	0-14	*no*
34	LA11309GS-16	0-9	0-13	0-11	0-12	0-18	*no*
35	NC13-23443	0-20	12-6	0-20	0-16	0-14	*no*
36	NC13-21213	17-0	18-0	20-0	17-0	18-0	*Yes*
37	NC13-20332	0-18	0-18	0-20	0-18	0-13	*no*
38	NC14-23372	13-2	15-0	8-10	0-18	0-18	*no*
39	NC14-23373	15-0	16-0	18-0	0-19	0-17	*no*
40	VA13W-174	0-19	0-19	0-22	0-21	0-23	*no*
41	VA09MAS2-131-6-2	0-16	0-19	0-22	0-16	0-15	*no*
42	VA14W-32	0-18	0-18	0-19	0-19	0-14	*no*
43	VA07MAS1-7047-1-1-4-2	0-18	0-18	0-23	0-18	0-16	*no*
44	DH12SRW056-058	0-16	0-16	0-18	0-21	0-19	*no*
45	DH11SRW061-16	0-21	0-20	0-20	0-16	0-17	*no*
46	VA09MAS2-131-6-2-4	0-14	0-18	0-19	0-20	0-18	*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	65.6	54.1	57.1	10.8	8.3	108	74.4	0.4	2.9	38.1
2	COKER9835	66.8	61.0	57.5	10.4	8.0	92	80.6	11.4	2.6	32.0
3	BESS	66.9	55.4	59.8	10.6	8.5	110	73.5	14.7	2.6	33.3
4	JAMESTOWN	64.3	54.1	61.5	11.9	9.2	127	80.1	17.0	2.7	31.2
5	NC13-20076	65.6	55.4	61.2	11.8	9.3	120	78.8	18.4	2.7	32.7
6	VA13W-38	66.3	50.5	61.0	12.4	9.6	125	71.1	8.3	2.8	33.1
7	ARLA07133C-19-4	67.5	50.3	61.4	10.6	8.5	110	75.1	26.6	2.8	34.6
8	ARLA07133C-3-4	66.3	57.1	59.2	11.3	8.9	120	74.9	21.2	2.7	31.7
9	ARLA06146E-1-4	65.4	53.6	61.2	12.2	9.4	160	80.5	10.7	2.8	34.0
10	AR08109-17-2	67.6	45.9	61.1	11.9	9.4	113	75.5	25.2	2.8	35.0
11	AR08015-17-4	68.7	37.9	61.4	10.7	9.3	135	95.3	53.6	2.9	41.0
12	AR08057-5-1	68.8	55.7	59.8	11.1	8.5	125	74.9	16.6	2.6	32.3
13	LES15-5369	66.4	57.6	60.5	10.6	8.5	117	83.3	17.7	2.8	37.3
14	LES15-5499	65.8	53.6	62.0	10.3	8.4	131	80.3	23.1	2.7	34.6
15	LES15-5605	69.0	59.2	60.8	10.3	8.2	126	76.9	7.7	2.7	35.2
16	GA09343-16ES3	68.3	50.1	60.8	11.4	9.1	144	75.2	28.1	3.0	40.8
17	GA09410-16ES22	65.8	51.1	59.6	12.4	9.9	118	75.0	28.3	2.8	33.5
18	GA09129-16EL56	66.5	49.1	61.8	11.8	9.2	125	75.3	29.2	2.8	33.3
19	GA121176-16JS49	67.1	55.1	60.0	11.8	9.3	128	77.8	19.2	2.9	36.8
20	GA09163-16ES19	66.4	47.9	62.3	12.2	10.1	155	76.7	31.3	2.8	35.3
21	GA09144-16ES23	63.4	55.6	59.6	11.8	9.7	140	85.3	16.5	2.7	33.5
22	GA05450-16ES8	65.2	52.1	61.1	12.3	9.7	135	77.0	21.3	2.7	33.9
23	GA09054-16ES25	63.7	52.2	62.7	12.7	9.7	136	84.1	26.3	2.7	33.6
24	KWS095	69.6	58.7	59.1	9.7	7.9	112	71.7	23.2	2.6	32.7
25	KWS103	68.6	55.8	59.0	11.5	8.5	127	73.4	12.0	2.7	36.3
26	KWS114	68.1	49.0	60.6	11.0	8.7	100	70.0	16.4	2.8	36.1
27	KWS122	66.5	50.4	60.9	10.7	8.5	121	72.8	24.3	2.8	37.6
28	KWS133	64.5	55.1	59.6	12.0	9.1	129	78.6	11.0	2.8	38.2
29	KWS141	66.6	55.7	62.0	10.4	8.4	139	74.9	17.3	2.6	32.7
30	LA08265C-50	65.7	52.2	62.1	11.3	8.6	136	69.9	25.3	2.7	34.9
31	LA09101UB-48-3-5	66.0	60.3	59.6	11.6	9.0	137	79.0	6.7	2.7	33.9
32	LW08049C-74-2-5	68.3	56.3	62.5	11.3	8.7	116	74.7	22.0	2.7	33.1
33	LA10081C-18	65.8	52.6	60.5	11.3	8.8	132	75.2	16.8	2.8	37.5
34	LA11309GS-16	67.1	54.0	61.1	10.6	8.5	124	73.1	17.6	2.7	35.0
35	NC13-23443	67.8	56.1	60.0	11.4	8.8	125	72.8	16.8	2.6	28.2
36	NC13-21213	65.6	54.4	60.7	11.1	8.3	132	79.0	29.8	2.7	31.4
37	NC13-20332	66.3	52.4	60.4	10.9	8.9	106	72.5	21.7	2.8	35.1
38	NC14-23372	67.9	51.0	62.9	10.9	8.5	102	76.1	26.4	2.8	35.4
39	NC14-23373	67.2	51.8	61.8	10.8	8.5	106	75.8	22.7	2.8	33.7
40	VA13W-174	66.0	53.8	60.0	10.6	8.4	122	77.2	16.0	2.7	32.6
41	VA09MAS2-131-6-2	65.8	50.9	58.7	11.3	8.7	114	76.1	14.8	2.8	39.5
42	VA14W-32	66.3	53.4	59.8	10.8	8.3	138	77.0	13.6	2.8	37.5
43	VA07MAS1-7047-1-1-4-2	66.8	50.3	61.6	12.1	9.4	126	72.5	8.1	2.8	34.1
44	DH12SRW056-058	67.9	54.5	60.7	10.8	8.8	148	74.4	21.8	2.8	36.3
45	DH11SRW061-16	66.2	49.3	61.2	11.0	8.5	131	78.9	31.3	2.9	37.9
46	VA09MAS2-131-6-2-4	66.5	50.4	59.8	12.1	9.2	119	73.7	16.0	2.7	38.7
	Tribute	66.5	53.8	61,2	10.2	8.1	129.7	77.6	25.5	2.7	36.1
	Hilliard	66.2	57.6	60.5	10.4	8.2	122.2	78.0	15.0	2.7	34.2
	Shirley	68.2	54.7	58.5	10.3	8.0	97.9	75.8	10.1	2.7	36.1
	Mean	66.7	53.2	60.6	11.2	8.8	124.3	76.6	19.5	2.7	34.9

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

Means Across Locations 2016-17

	Cultivar/ Designation	FHB Incidence	RANK	FHB Severity	RANK	FHB Index	RANK	FDK	RANK	ISK	RANK	DON	RANK
1	ERNIE	42	16	23	12	14	21	28	13	28	7	8	12
2	COKER9835	74	46	54	46	45	46	71	46	61	46	11	27
3	BESS	36	5	17	3	7	1	12	1	23	1	7	7
4	JAMESTOWN	42	16	16	2	10	6	21	3	27	4	6	1
5	NC13-20076	39	9	21	8	11	11	22	5	29	10	6	1
6	VA13W-38	43	19	23	12	11	11	41	37	31	16	8	12
7	ARLA07133C-19-4	34	2	20	7	10	6	24	7	27	4	11	27
8	ARLA07133C-3-4	46	29	26	22	19	31	35	26	36	29	9	17
9	ARLA06146E-1-4	44	24	19	5	10	6	27	11	31	16	7	7
10	AR08109-17-2	43	19	26	22	10	6	23	6	29	10	9	17
11	AR08015-17-4	43	19	33	37	21	37	37	29	40	36	13	36
12	AR08057-5-1	43	19	34	42	21	37	43	39	40	36	9	17
13	LES15-5369	38	8	21	8	9	4	31	19	29	10	6	1
14	LES15-5499	37	7	26	24	11	11	29	16	28	7	9	17
15	LES15-5605	41	13	24	17	12	16	29	16	30	14	12	31
16	GA09343-16ES3	52	40	33	37	21	37	57	45	47	45	15	41
17	GA09410-16ES22	55	43	34	42	20	32	40	34	40	36	15	41
18	GA09129-16EL56	41	13	24	17	13	18	32	23	31	16	9	17
19	GA121176-16JS49	50	37	27	27	21	37	45	42	43	43	10	25
20	GA09163-16ES19	40	12	23	12	12	16	28	13	30	14	16	43
21	GA09144-16ES23	47	32	27	27	15	24	31	19	34	23	12	31
22	GA05450-16ES8	52	40	30	32	20	32	45	42	42	42	16	43
23	GA09054-16ES25	48	34	33	37	22	42	38	30	41	40	11	27
24	KWS095	41	13	25	20	13	18	33	24	34	23	8	12
25	KWS103	35	3	23	12	10	6	24	7	27	4	7	7
26	KWS114	43	19	37	45	16	25	35	26	37	30	12	31
27	KWS122	33	1	23	12	9	4	18	2	25	2	7	7
28	KWS133	45	25	27	27	14	21	34	25	34	23	12	31
29	KWS141	36	5	24	17	11	11	21	3	28	7	9	17
30	LA08265C-50	47	32	30	32	20	32	31	19	38	33	7	7
31	LA09101UB-48-3-5	45	25	21	8	13	18	31	19	31	16	6	1
32	LW08049C-74-2-5	42	16	29	30	17	29	25	9	33	21	8	12
33	LA10081C-18	48	34	25	20	16	25	40	34	37	30	13	36
34	LA11309GS-16	46	29	29	30	18	30	38	30	35	28	6	1
35	NC13-23443	55	43	33	37	23	43	36	28	34	23	6	1
36	NC13-21213	45	25	32	36	20	32	48	44	41	40	8	12
37	NC13-20332	55	43	26	24	16	25	38	30	37	30	11	27
38	NC14-23372	50	37	19	5	11	11	28	13	32	20	9	17
39	NC14-23373	39	9	15	1	7	1	26	10	25	2	13	36
40	VA13W-174	46	29	21	8	14	21	44	41	34	23	9	17
41	VA09MAS2-131-6-2	49	36	31	34	21	37	41	37	38	33	12	31
42	VA14W-32	51	39	36	44	27	45	43	39	46	44	17	45
43	VA07MAS1-7047-1-1-4-2	35	3	17	3	8	3	38	30	29	10	14	40
44	DH12SRW056-058	39	9	26	24	16	25	27	11	33	21	13	36
45	DH11SRW061-16	45	25	33	37	23	43	30	18	38	35	10	25
46	VA09MAS2-131-6-2-4	52	40	31	34	20	32	40	34	40	36	18	46
	Mean	45		27		16		34		34		10	
	LSD (0.05)	26		24		24		28		19		9	
	CV%	29.2		46.4		77.9		42.2		28.6		44.1	
	Mean v GEBV Correlation	0.63		0.53		0.54		0.61		0.57		0.40	

Means Across Locations 2016 - 2017

	Cultivar/ Designation	Heading Date	RANK	Plant Height	RANK	Flour Yield %	RANK	Softness Equiv. %	RANK	Hessian Fly Bio. L	H13	Fhb1	Fhb Massey 3BL	Fhb 5A_Ning	Bess 2B	Bess 3B	Jamestown 1B	Jamestown 6A	NC-Neuse 1A	NC-Neuse 6A
1	ERNIE	109	11	33	9	65.6	38	54.1	19	0-16	no	no	YES	YES	no	no	no	no	YES	YES
2	COKER9835	110	17	32	4	66.8	18	61.0	1	0-20	no	no	no	no	no	no	no	no	no	no
3	BESS	113	34	37	41	66.9	17	55.4	13	0-22	no	no	no	no	YES	YES	YES	no	YES	no
4	JAMESTOWN	106	2	32	4	64.3	44	54.1	19	0-16	no	no	no	no	no	no	YES	YES	YES	no
5	NC13-20076	109	11	37	41	65.6	38	55.4	13	0-17	no	no	no	no	no	no	no	no	het	ND
6	VA13W-38	109	11	34	16	66.3	26	50.5	35	0-17	no	no	no	no	no	no	YES	YES	no	no
7	ARLA07133C-19-4	111	24	35	30	67.5	13	50.3	38	0-18	no	no	no	no	no	no	YES	no	no	no
8	ARLA07133C-3-4	109	11	36	35	66.3	26	57.1	6	0-19	no	no	no	no	no	no	no	no	het	no
9	ARLA06146E-1-4	110	17	36	35	65.4	41	53.6	23	0-15	no	no	no	no	no	no	YES	YES	YES	no
10	AR08109-17-2	112	30	34	16	67.6	12	45.9	45	0-16	no	no	no	no	no	no	no	no	no	het
11	AR08015-17-4	112	30	38	46	68.7	4	37.9	46	0-15	no	no	no	no	no	no	no	no	no	no
12	AR08057-5-1	113	34	37	41	68.8	3	55.7	10	0-15	no	no	no	no	no	no	no	Het	no	no
13	LES15-5369	113	34	34	16	66.4	24	57.6	5	0-17	no	no	YES	no	no	no	no	no	YES	no
14	LES15-5499	115	45	34	16	65.8	33	53.6	23	0-23	no	no	no	no	no	no	YES	no	YES	no
15	LES15-5605	114	42	33	9	69.0	2	59.2	3	0-17	no	no	no	no	no	no	YES	no	YES	no
16	GA09343-16ES3	111	24	34	16	68.3	6	50.1	40	0-18	no	no	no	no	no	no	no	no	no	no
17	GA09410-16ES22	110	17	31	2	65.8	33	51.1	32	0-16	Het	no	no	no	no	no	no	no	no	no
18	GA09129-16EL56	108	8	36	35	66.5	21	49.1	42	0-17	no	no	no	no	no	no	YES	Het	YES	no
19	GA121176-16JS49	105	1	33	9	67.1	15	55.1	15	0-16	no	no	no	no	no	no	YES	YES	no	no
20	GA09163-16ES19	110	17	34	16	66.4	24	47.9	44	0-11	no	no	no	no	no	no	no	YES	no	no
21	GA09144-16ES23	108	8	34	16	63.4	46	55.6	12	0-17	no	no	no	**	no	no	no	Het	het	no
22	GA05450-16ES8	111	24	34	16	65.2	42	52.1	30	0-21	no	no	no	no	no	no	no	no	no	no
23	GA09054-16ES25	106	2	33	9	63.7	45	52.2	28	21-0	Yes	no	no	no	no	no	no	Het	het	no
24	KWS095	113	34	36	35	69.6	1	58.7	4	0-23	no	Fhb1	no	no	no	no	no	no	no	no
25	KWS103	114	42	36	35	68.6	5	55.8	9	0-19	no	no	Het	no	no	no	no	no	YES	YES
26	KWS114	115	45	37	41	68.1	8	49.0	43	0-15	no	no	no	no	no	no	no	no	YES	YES
27	KWS122	114	42	37	41	66.5	21	50.4	36	0-17	no	no	no	no	no	Het	no	no	YES	YES
28	KWS133	113	34	35	30	64.5	43	55.1	15	0-17	no	no	no	no	no	no	Het	no	YES	YES
29	KWS141	112	30	34	16	66.6	20	55.7	10	0-19	no	no	YES	no	no	no	YES	no	YES	no
30	LA08265C-50	111	24	35	30	65.7	37	52.2	28	0-16	no	no	no	no	no	no	YES	no	YES	no
31	LA09101UB-48-3-5	110	17	34	16	66.0	31	60.3	2	0-13	no	ND	no	no	no	no	YES	no	YES	no
32	LW08049C-74-2-5	110	17	35	30	68.3	6	56.3	7	0-18	no	no	no	no	no	no	no	no	no	no
33	LA10081C-18	108	8	34	16	65.8	33	52.6	26	0-14	no	no	no	no	no	no	no	no	YES	no
34	LA11309GS-16	107	5	33	9	67.1	15	54.0	21	0-18	no	no	no	no	no	no	no	no	YES	YES
35	NC13-23443	113	34	36	35	67.8	11	56.1	8	0-14	no	no	no	no	no	no	YES	no	no	no
36	NC13-21213	111	24	34	16	65.6	38	54.4	18	18-0	Yes	no	no	no	no	no	YES?	no	YES	Het
37	NC13-20332	112	30	32	4	66.3	26	52.4	27	0-13	no	no	no	no	no	no	YES	Het	YES	no
38	NC14-23372	113	34	34	16	67.9	9	51.0	33	0-18	no	Fhb1	no	YES	no	no	YES	no	YES	YES
39	NC14-23373	113	34	34	16	67.2	14	51.8	31	0-17	no	Fhb1	no	no	no	no	YES	no	YES	YES
40	VA13W-174	107	5	33	9	66.0	31	53.8	22	0-23	no	no	no	no	no	no	no	no	YES	Het
41	VA09MAS2-131-6-2	109	11	30	1	65.8	33	50.9	34	0-15	no	no	no	no	no	no	no	no	YES	no
42	VA14W-32	106	2	31	2	66.3	26	53.4	25	0-14	no	no	no	no	no	no	no	no	no	no
43	VA07MAS1-7047-1-1-4-2	107	5	32	4	66.8	18	50.3	38	0-16	no	no	Het	no	no	no	YES	YES	no	no
44	DH12SRW056-058	111	24	35	30	67.9	9	54.5	17	0-19	no	no	YES	no	no	no	YES	no	no	no
45	DH11SRW061-16	109	11	33	9	66.2	30	49.3	41	0-17	no	no	no	no	no	no	no	no	no	no
46	VA09MAS2-131-6-2-4	110	17	32	4	66.5	21	50.4	36	0-18	no	no	no	no	no	no	no	no	YES	no
	Mean	110		34		66.6		53.1												
	LSD (0.05)	7		4		.		.												
	CV%	3.3		5.2		.		.												
	Mean v GEBV Correlation	0.29		0.35		.		.												

Means Over the 2016 and 2017 Seasons

Cultivar/ Designation	FHB Incidence %	FHB Severity %	FHB Index	FDK %	ISK	DON ppm	Heading Date Julian	Plant Height in	Flour Yield %	Softness Equivalent %
ERNIE	46	24	14	30	30	8	116	33	64.3	53.0
COKER 9835	79	55	47	64	59	13	118	32	66.4	60.5
BESS	34	17	7	14	21	6	120	36	66.0	54.7
JAMESTOWN	39	18	10	22	27	7	113	32	64.7	54.1
NC13-20076	34	18	9	18	25	6	117	36	65.8	55.7
VA13W-38	45	22	11	33	29	9	116	33	66.7	51.7
Mean	46	26	16	30	32	8	117	34	65.3	55.0
LSD (0.05)	15	6	4	16	7	4	2	2	2.5	3.0
CV%	12.5	9.0	10.4	21.2	8.8	16.6	0.7	2.6	1.5	2.1

Means and Variances of Genotypic Estimated Breeding Values for Severity of progenies from selected crosses between entries in the 2017 nursery, plus the means for the 10 % most resistant progeny in each cross.

Parent 1	Parent 2	Severity (%) Genotype Estimated Breeding Values of Cross Progenies		
		Mean	Variance	Mean lowest 10%
NC13-20076	VA13W-38	17	11.6	11
BESS	NC13-20076	20	17.3	13
NC13-20076	VA07MAS1-7047-1-1-4-2	19	11.5	13
BESS	VA13W-38	19	11.6	14
LES15-5369	VA13W-38	20	13.0	14
NC13-20076	NC14-23373	21	16.1	15
GA09163-16ES19	VA13W-38	22	17.0	15
NC13-20076	NC14-23372	21	15.0	15
ERNIE	NC13-20076	23	20.0	15
LW08049C-74-2-5	VA13W-38	20	8.5	15
NC14-23373	VA13W-38	21	10.6	15
NC14-23372	VA13W-38	21	10.1	15
LW08049C-74-2-5	NC13-20076	21	10.6	15
BESS	VA07MAS1-7047-1-1-4-2	21	10.8	15
LES15-5369	VA07MAS1-7047-1-1-4-2	22	12.9	16
ERNIE	VA13W-38	22	10.9	16
VA07MAS1-7047-1-1-4-2	VA13W-38	18	1.3	16
LES15-5369	NC13-20076	21	8.6	16
JAMESTOWN	VA13W-38	22	9.0	16
BESS	LES15-5369	23	15.9	17
GA09163-16ES19	VA07MAS1-7047-1-1-4-2	24	15.8	17
NC14-23373	VA07MAS1-7047-1-1-4-2	22	10.9	17
DH11SRW061-16	NC13-20076	25	22.1	17
NC13-20076	NC13-21213	23	13.3	17
NC13-21213	VA13W-38	22	9.9	17
GA09163-16ES19	NC13-20076	23	11.4	17
BESS	LW08049C-74-2-5	23	11.9	17
NC14-23372	VA07MAS1-7047-1-1-4-2	22	10.3	17
LW08049C-74-2-5	VA07MAS1-7047-1-1-4-2	22	7.8	17
BESS	NC14-23373	24	14.0	17
LES15-5605	NC13-20076	25	20.6	17
GA09054-16ES25	VA13W-38	23	10.9	17
BESS	NC14-23372	24	14.4	17
KWS141	VA13W-38	24	15.5	17
DH11SRW061-16	VA13W-38	24	15.0	17
LA11309GS-16	VA13W-38	23	12.0	17
VA09MAS2-131-6-2	VA13W-38	24	15.4	17
LES15-5369	LW08049C-74-2-5	24	14.8	17
AR08109-17-2	VA13W-38	26	25.7	17
GA09054-16ES25	NC13-20076	24	12.5	18
VA09MAS2-131-6-2-4	VA13W-38	25	15.7	18
AR08109-17-2	NC13-20076	27	28.8	18
LES15-5499	VA13W-38	23	10.5	18
GA09163-16ES19	NC14-23373	26	22.0	18
BESS	GA09163-16ES19	25	16.1	18
GA09163-16ES19	NC14-23372	26	22.4	18
LW08049C-74-2-5	NC14-23373	24	14.0	18

Means and Variances of Genotypic Estimated Breeding Values for FDK of progenies from selected crosses between entries in the 2017 nursery, plus the means for the 10 % most resistant progeny in each cross.

Parent 1	Parent 2	FDK (%) Genotype Estimated Breeding Values of Cross Progenies		
		Mean	Variance	Mean lowest 10%
BESS	NC13-20076	16	9.7	10
NC13-20076	VA13W-38	16	8.5	11
BESS	VA13W-38	17	10.7	11
LES15-5499	VA13W-38	17	9.6	12
BESS	LES15-5499	17	8.5	12
LES15-5499	NC13-20076	16	5.7	12
NC13-20076	VA07MAS1-7047-1-1-4-2	17	7.5	12
BESS	VA07MAS1-7047-1-1-4-2	18	10.5	12
LW08049C-74-2-5	NC13-20076	17	6.4	13
ERNIE	NC13-20076	18	9.8	13
BESS	ERNIE	19	13.1	13
BESS	LW08049C-74-2-5	18	8.7	13
ERNIE	LES15-5499	20	15.1	13
NC13-20076	NC14-23373	17	6.3	13
KWS141	NC13-20076	18	9.2	13
LES15-5499	VA07MAS1-7047-1-1-4-2	18	8.7	13
BESS	NC14-23373	18	8.5	13
NC14-23373	VA13W-38	18	8.8	13
LW08049C-74-2-5	VA13W-38	18	8.0	13
KWS141	VA13W-38	19	11.5	13
BESS	NC14-23372	19	10.0	13
BESS	KWS141	19	10.9	13
BESS	JAMESTOWN	19	8.8	14
LES15-5499	LW08049C-74-2-5	19	8.6	14
NC13-20076	NC14-23372	18	6.3	14
LES15-5499	NC14-23373	19	8.4	14
NC14-23372	VA13W-38	19	8.4	14
ERNIE	VA13W-38	19	9.6	14
KWS141	LES15-5499	20	11.0	14
JAMESTOWN	VA13W-38	19	7.1	14
LES15-5499	NC14-23372	19	8.9	14
JAMESTOWN	NC13-20076	18	4.0	14
LW08049C-74-2-5	VA07MAS1-7047-1-1-4-2	19	7.5	14
LW08049C-74-2-5	NC14-23373	20	9.0	14
GA121176-16JS49	VA13W-38	21	14.0	14
KWS103	NC13-20076	21	13.2	14
NC14-23373	VA07MAS1-7047-1-1-4-2	19	7.9	15
KWS141	VA07MAS1-7047-1-1-4-2	20	10.0	15
KWS141	LW08049C-74-2-5	20	10.9	15
GA121176-16JS49	NC13-20076	20	8.8	15
JAMESTOWN	LES15-5499	19	5.9	15
ERNIE	LW08049C-74-2-5	21	10.1	15
LW08049C-74-2-5	NC14-23372	20	8.6	15
NC14-23372	VA07MAS1-7047-1-1-4-2	20	7.7	15
ERNIE	VA07MAS1-7047-1-1-4-2	20	8.6	15
BESS	GA121176-16JS49	21	10.6	15
KWS103	VA13W-38	22	14.1	15

Parent 1	Parent 2	DON (ppm) Genotype Estimated Breeding Values of Cross Progenies		
		Mean	Variance	Mean lowest 10%
LW08049C-74-2-5	VA09MAS2-131-6-2	5	6.8	0
KWS103	LW08049C-74-2-5	5	7.1	0
LW08049C-74-2-5	VA09MAS2-131-6-2-4	5	6.1	1
LW08049C-74-2-5	NC14-23372	4	3.6	1
ARLA06146E-1-4	LW08049C-74-2-5	5	4.8	1
LW08049C-74-2-5	NC14-23373	4	3.8	1
KWS114	LW08049C-74-2-5	5	5.0	1
GA09343-16ES3	LW08049C-74-2-5	5	4.3	1
LW08049C-74-2-5	NC13-21213	4	2.9	1
GA09343-16ES3	NC14-23372	5	5.9	1
GA09343-16ES3	NC14-23373	6	6.0	1
NC13-21213	NC14-23372	5	3.8	1
KWS103	NC13-21213	6	6.1	1
NC13-21213	NC14-23373	5	4.1	1
LES15-5369	LW08049C-74-2-5	5	4.2	2
LW08049C-74-2-5	NC13-20076	4	2.7	2
NC13-21213	VA09MAS2-131-6-2	6	5.2	2
GA09343-16ES3	NC13-21213	5	4.2	2
JAMESTOWN	LW08049C-74-2-5	5	2.9	2
GA09054-16ES25	LW08049C-74-2-5	5	3.2	2
KWS114	NC13-21213	6	4.5	2
LES15-5605	LW08049C-74-2-5	5	4.2	2
GA09343-16ES3	NC13-20076	6	4.3	2
BESS	LW08049C-74-2-5	5	2.9	2
BESS	NC13-21213	6	4.2	2
ARLA06146E-1-4	NC13-21213	5	3.8	2
LW08049C-74-2-5	VA13W-38	5	2.4	2
LW08049C-74-2-5	VA07MAS1-7047-1-1-4-2	5	2.8	2
ERNIE	LW08049C-74-2-5	5	3.7	2
LA08265C-50	LW08049C-74-2-5	5	3.2	2
GA121176-16JS49	LW08049C-74-2-5	6	3.4	2
LES15-5499	LW08049C-74-2-5	5	3.2	2
ARLA06146E-1-4	NC14-23372	5	2.8	2
NC13-21213	VA13W-38	5	3.0	2
NC13-20076	NC13-21213	5	2.2	2
ARLA06146E-1-4	NC14-23373	6	2.7	3
NC13-21213	VA07MAS1-7047-1-1-4-2	6	2.9	3
NC14-23372	VA13W-38	5	2.5	3
KWS114	NC14-23372	6	2.7	3
NC13-20076	NC14-23372	5	1.7	3
JAMESTOWN	NC14-23372	5	2.2	3
NC13-20076	NC14-23373	5	2.0	3
JAMESTOWN	NC14-23373	6	2.4	3
JAMESTOWN	NC13-21213	5	1.7	3
GA09054-16ES25	NC13-21213	6	2.0	3
ARLA06146E-1-4	NC13-20076	6	1.9	3
NC14-23372	NC14-23373	5	0.5	4