

UNIFORM SOUTHERN SOFT RED WINTER WHEAT FUSARIUM HEAD BLIGHT SCREENING NURSERY

2003 NURSERY REPORT

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This is a joint progress report of cooperative investigations underway and funded by the 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 cooperators 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 agency or agencies involved.

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LOCATION NOTES

Bay, Arkansas

- Cooperators: June Hancock, Luis Lazoanaya
Syngenta Seeds Inc.
- Reps: 2 Plot size: 4 rows 3 ft long
- Inoculation method: Infected corn on March 11 and infected wheat on April 22. Counts were made around May 12. Visual scores were rated on May 2.
- Precipitation during grain fill: Mainly natural moisture. From April 24 to May 19 we had almost 16 inches of rain.
- Avg temp. during grain fill: 65-70, very cool

Fayetteville and Kibler, Arkansas

Cooperators: Gene Milus, Peter Rohman, Sam Markell

University of Arkansas. Fayetteville (F) and Kibler (K).

Reps: 4 (field), 3 (greenhouse)

Plot size: Two rows, five feet long (F). Three rows, five feet long (K).

Seed date: 10/15/02 (F) 10/23/02 (K)

Harvest date: 6/09/03 (K), Fayetteville not harvested.

Fertilizer: 100 lbs N (F), 80 lbs N (K) split appl.

Inoculation method: FHB-infected corn kernels applied twice for total of 6 kernels/sq ft. Applied 4/04/03 and 04/14/03 (F). 03/26/03 and 04/07/03 (K).

Irrigation method: eight mist periods of 10 minutes between midnight and 8am on nine nights between 29 April and 13 May (F).

Two hour sprinkling periods three days per week from April to mid-May (K).

Precipitation during grain fill: 2.47" in April, 5.90" in May. Most occurred after irrigation ceased (F). 2.6" in April and 2.4" in May (K).

Date/Feekes growth stage when scored: 5/27/03 Feekes 11.2 (F). 5/19/03 Feekes 11.2 (K).

Comments: Three weeks of rainy weather after irrigation stopped led to severe FHB. No samples sent for DON analysis.

Urbana, Illinois

Cooperators: Fred Kolb, Larry Boze

University of Illinois, Urbana, IL.

Reps: 3 Plot size: 1 row x 3'

Seed date: 09/27/02

Harvest date: 07/07/03

Fertilizer: 40 lb N/A; P and K okay; no spring topdress

Inoculation method: wheat grain spawn and corn fodder scattered in field and sprayed with inoculum.

Precipitation during grain fill: Little natural, misted 5:30-7 AM and 7:30-9 PM daily (0.12 in./hr).

Date/Feekes growth stage when scored: Feekes 10.5, 29 d after flowering. Longer than normal due to cool temperatures.

Comments: Cool weather delayed onset of symptoms.

Wooster, Ohio

Cooperators: Clay Sneller, Pat Lipps.

Ohio State University, Wooster, OH.

Reps: 3 Plot size: One 3' row.

Fertilizer: P, K according to soil test; 110 lbs N split applied.

Irrigation: Misted at sunrise and sunset for two weeks after anthesis.

Inoculation method: Infested corn kernels.

Rated 28-31 days after anthesis.

Comments: Cool temperatures extended the heading period and delayed disease onset.

Lexington, Kentucky

Cooperators: A. J. Stewart and D. Van Sanford

University of Kentucky. Lexington, KY.

Reps: 2 Plot size: Two 4' rows

Seed date: 10/22/021

Harvest date: 6/29/03

Fertilizer: P, K, acc. to soil tests, 110 lb N split application

Irrigation method: Evening/early morning irrigation.

Inoculation method: Scabby corn

Precipitation during grain fill: 8.59 in.

Avg temperature during grain fill: 61.7° F.

Date/Feekes growth stage when scored: 10.5 + 21 d

Blacksburg, Virginia

Cooperators: Carl A. Griffey, Julie Wilson, Daryoosh Nabati,

Virginia Tech, Blacksburg, VA.

Reps: 3, randomized complete block Plot size: 4 x 5 ft (20 ft²) Seed date: 10/9/02

Harvest date: 7/15/03.

Fertilizer: 25-70-60 applied 10/08/02 and 03/23/03.

Inoculation method: Field, conidial spray. Greenhouse, floret inoculation.

Precipitation during grain fill: 14.14 in.; mist irrigation also applied as needed

Avg temperature during grain fill: 62.7°F

Manhattan, Kansas

Cooperators: Gina Brown-Guedira.

USDA-ARS Genotyping Center

Kinston, North Carolina

Cooperators: Paul Murphy, Rene Navarro

North Carolina State University, Kinston, NC.

Reps: 2 Plot size: 4 rows x 3' long Seed date: 11/26/02 Harvest date: 6/16/03

Fertilizer: 130 lbs N

Inoculation method: Conidial suspension (3×10^4 spores/ml) sprayed on plots at anthesis; misted for 14 d

Precipitation during grain fill: 11.01in.

Avg temperature during grain fill: 62.7°F.

Comments: Very, very wet season. Late planting and constant moisture through winter resulted in poor stand establishment. Less than desirable plots. Although heavy natural FHB epidemic, disease development in nursery was poor.

Columbia, Missouri

Cooperator: Anne L. McKendry, Jessica Tremain

University of Missouri, Columbia, MO.

Reps: 4. RCBD. Plot size: 4 rows each 3' long. Planted: 10/01/02. Harvested: 01/14/03

Inoculation method (Field): Sprayed at 75% heading with a suspension of *Fusarium graminearum* macroconidia concentrated to 50,000 spores/ml. Plots were rated after 28 days which was later than usual due to cool temperatures.

Precipitation during grain fill: Overhead mist irrigation

Inoculation method (Greenhouse): Point inoculation of a single central floret at anthesis with 10 micro litres of a 50,000 spores/mL suspension of *Fusarium graminearum* macroconidia. Plants were misted for 72 hours and rated 21 days post inoculation.

Comments: Field conditions were cooler than usual this spring and we did not get normal amount of disease development. Greenhouse point inoculations were OK. All field data are means based on 2 random samples of 10 heads/plot in each of four replications (80 plants total). Greenhouse data are mean data for 8 plants/entry.

Fundulea, Romania.

Cooperator: Marianna Ittu.

Agricultural Research Development Institute.

Reps: 3 Plot size: single 0.5m row. Planted: 10/23/02. Harvested 07/03/03.

Inoculation method: Injection of conidial suspension in midflower of 20 heads at anthesis.

Feekes growth stage when scored: 10.5 plus 10 and 20 days.

Average temperature during grain fill: 22.4⁰c.

Precipitation during grain fill: 35.8mm.

Comments: High rainfall at sowing time delayed planting. Long, severe winter led to poor survival of winter tender cultivars. Late spring and unusually hot and dry weather reduced plant height and grain yield.

Szeged, Hungary.

Cooperator: Akos Mesterhazy.
Cereal Research Institute.

Dublin, Ireland.

Cooperators: Roy Browne, Mike Cooke.
University College Dublin.

In vitro assay. Partial disease resistance components detected in a detached leaf assay as described by Browne and Cooke, (2004), European Journal of Plant Pathology,(in press).

Five isolates of *M. nivale* var. *majus* utilized. Five replicates over time. An experimental unit consisted of one Petri dish containing four leaves of an entry. A different isolate of *M. nivale* utilized in each of the five replications.

Entry List, 2003 Nursery

ENTRY NO	CULTIVAR/DESINATION	PEDIGREE	CONTRIBUTOR	IN NURSERY SINCE
1	ERNIE	PIKE /3/ STODDARD / BLUEBOY // STODDARD / D1707	CHECK (RES)	1999-00
2	COKER 9835	CK68-19 // CK61-19*3 / IN4946A4-18-2-10-2 /4/ Bb /3/ CK65-20*5 / W17-TRANS // TIFT /5/ P 2550	CHECK (SUS)	2000-01
3	AR 857-1-1	MADISON / YMI 6	BACON	2002-03
4	AR 857-1-2	MADISON / YMI 6	BACON	2002-03
5	AR 93019-2-1	VA88-52-69 / LOUVRIN 34	BACON	2002-03
6	AR93035-4-1	PIONEER 2548 / 4549-W1-2	BACON	2002-03
7	ARGE 97-1042-4-5	MASON / CATBIRD	MILUS	2002-03
8	ARGE 97-1033-3-5	FREEDOM / CATBIRD	MILUS	2002-03
9	ARGE 97-1048-3-6	MASON // SHA 3 / CATBIRD	MILUS	2002-03
10	ARGE 97-1038-3-5	MASON*2 // SHA3 / SUPER KAUZ	MILUS	2002-03
11	ARGE 97-1047-4-2	P2643 / 3 NING 7840 // PARULA / VEERY # 6	MILUS	2002-03
12	B980416	COKER 9543 / ABI 85-81	HANCOCK	2001-02
13	B980582	L881060 / L880436	HANCOCK	2001-02
14	B011066	COKER 9877 / 8268G1-18-4 // COKER 9474	HANCOCK	2002-03
15	B011117	YMI 6 / COKER 9877	HANCOCK	2002-03
16	GA 931587E53	84368 / FFR 518	JOHNSON	2002-03
17	GA 931630E48	FLEMING / P2580 // 84200-7	JOHNSON	2002-03
18	GA 94261E7	AGS 2000 // 841114 / FFR 518	JOHNSON	2002-03
19	GA 931233A24	GORE*2 / 83267	JOHNSON	2002-03
20	GA 941208E35	ROBERTS /4/ P 2580 // T83103*2 / HAMLET /3/ FLEMING	JOHNSON	2002-03
21	MV 5-46	VA91-54-222 / FFR 555W // VA 93-52-55, F5	COSTA	2002-03
22	MV 15-42	VA93-51-27 // VA91-54-343 / GA-GORE, F5	COSTA	2002-03
23	MV 27-78	VA90-52-26(LOV29/TYL//RCT*2/GAINES) / COKER 9835, F5	COSTA	2002-03
24	NC98-26192	P81401A1-42-1 / SALUDA /3/ P 2555 / COKER 9907 // MV14 / WAKEFIELD	MURPHY	2001-02
25	NC99-13296	STUCKY / MADISON // COKER 9474	MURPHY	2002-03
26	NC99-13308	STUCKY / MADISON // COKER 9474	MURPHY	2002-03
27	VAN98W342	COKER 983 // GA-ANDY / VA90-21-20(79IWWRN67//COKER65-20/ATR)	GRIFFEY	2002-03
28	VA00W562	PC-7(CHILL "S"/YM16:SCAB-RES) / PION2548 // PION2684	GRIFFEY	2001-02
29	VA00W566	PC-7(CHILL "S"/YM16:SCAB-RES) / PION2548 // PION2684	GRIFFEY	2001-02
30	VA01W461	PC-11(SHANGHAI4/CHILL "S":SCAB-RES) /3/ VA92-51-39 // FFR 555W / RCT /4/ COKER 9803	GRIFFEY	2001-02
31	VA02W713	NING 7840 / P2691 // ROANE	GRIFFEY	2002-03
32	VA02W732	PC-7(CHILL "S"/YM16:SCAB-RES)/3/ VA92-51-39 // CK9803 / RCT /4/ VA93-52-55	GRIFFEY	2002-03

FHB Incidence (1-100)

CULTIVAR/ DESIGNATION	BAY AR		COL'BIA MO		K'STON NC		B'BURG VA		URBANA IL		W'STER OH		LEX'TON KY		MEAN ALL LOC.	
	RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	33	10	71	12	6	4	28	3	73	9	100	.	36	1	49.6	5
2 COKER 9835	70	30	100	32	43	26	70	28	100	31	100	.	62	15	77.8	32
3 AR 857-1-1	30	7	80	22	8	8	40	10	72	7	93	2	84	31	58.2	11
4 AR 857-1-2	22	3	63	7	12	12	33	7	68	4	93	2	46	3	48.3	3
5 AR 93019-2-1	50	21	60	5	13	15	62	24	82	14	98	8	52	11	59.6	15
6 AR93035-4-1	46	17	78	16	25	24	57	19	83	16	98	8	72	26	65.7	21
7 ARGE 97-1042-4-5	10	2	56	4	.	.	23	2	77	11	100	.	47	4	44.4	2
8 ARGE 97-1033-3-5	8	1	51	3	13	16	30	4	60	3	100	.	48	6	44.3	1
9 ARGE 97-1048-3-6	28	6	48	2	8	7	43	13	72	8	100	.	62	17	51.5	7
10 ARGE 97-1038-3-5	32	9	63	6	8	9	40	11	77	12	98	8	65	19	54.7	10
11 ARGE 97-1047-4-2	24	4	70	10	4	1	33	8	70	5	100	.	54	12	50.7	6
12 B980416	48	18	44	1	10	10	32	6	73	10	93	2	65	20	52.1	9
13 B980582	32	8	65	9	7	6	22	1	70	6	100	.	48	5	49.1	4
14 B011066	50	20	71	11	17	19	43	14	82	15	98	8	55	13	59.4	14
15 B011117	40	14	64	8	22	22	40	12	55	1	92	1	50	8	51.8	8
16 GA 931587E53	72	31	95	30	7	5	85	31	99	29	100	.	68	23	75.1	30
17 GA 931630E48	52	24	80	21	.	.	62	25	83	17	100	.	68	22	66.4	22
18 GA 94261E7	68	29	100	31	13	17	81	30	99	30	100	.	78	28	77.1	31
19 GA 931233A24	60	26	90	28	27	25	85	32	88	21	97	6	52	10	71.2	28
20 GA 941208E35	80	32	79	19	.	.	33	9	98	27	100	.	81	30	70.9	27
21 MV 5-46	42	15	78	15	11	11	60	21	98	28	100	.	87	32	68.0	24
22 MV 15-42	58	25	80	20	.	.	45	15	98	26	100	.	69	24	67.2	23
23 MV 27-78	52	23	94	29	23	23	63	26	92	22	100	.	71	25	70.7	26
24 NC98-26192	40	13	83	23	5	3	53	18	85	19	100	.	63	18	61.4	18
25 NC99-13296	52	22	86	25	.	.	63	27	100	32	100	.	79	29	72.3	29
26 NC99-13308	38	12	85	24	12	13	47	17	94	25	100	.	49	7	60.7	17
27 VAN98W342	28	5	88	27	14	18	70	29	93	23	100	.	43	2	62.4	19
28 VA00W562	66	27	88	26	21	21	60	22	83	18	100	.	75	27	70.5	25
29 VA00W566	50	19	79	18	.	.	30	5	78	13	100	.	62	16	58.8	13
30 VA01W461	68	28	75	14	19	20	45	16	57	2	93	2	51	9	58.3	12
31 VA02W713	34	11	74	13	5	2	60	23	85	20	97	6	66	21	60.1	16
32 VA02W732	44	16	79	17	12	14	58	20	93	24	100	.	59	14	63.7	20

Mean:	45	75	14	50	79	98	62	61.0
L.S.D. (0.05)	28	33	10	25	16	7	35	10.9
CV%	31.0	16.0	50.5	36.3	11.0	22.0	27.1	16.7

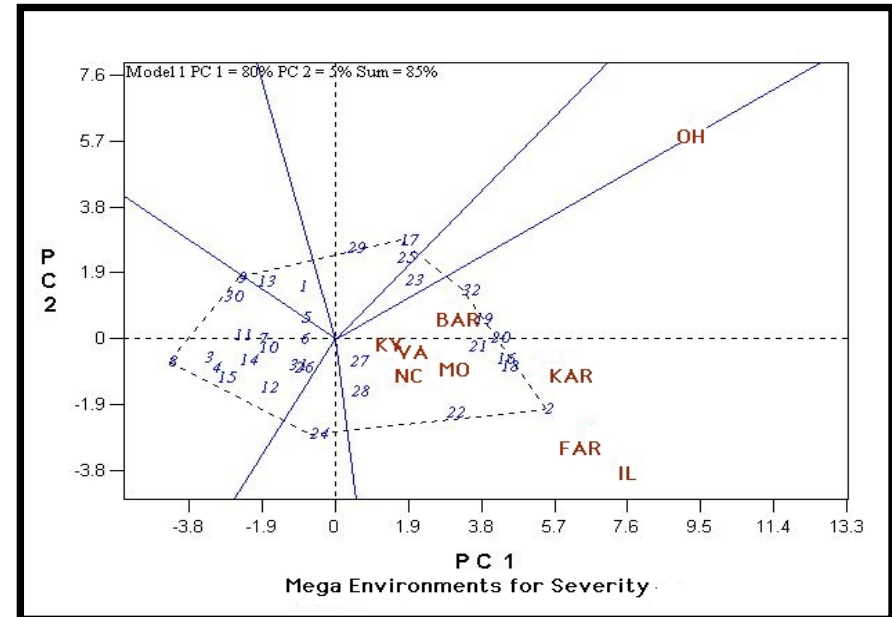
FHB Severity (1-100)

Cultivar/ Designation	BAY	F'VILLE	KIBLER	COL'BIA	K'STON	B'BURG	URBANA	W'STER	LEX'TON	MEAN
	AR	AR	AR	MO	NC	VA	IL	OH	KY	ALL LOC.
	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK
1 ERNIE	12 8	44 16	40 17	8 14	2 3	16 12	19 6	58 20	13 2	23.5 13
2 COKER 9835	35 28	74 28	81 32	43 32	51 26	28 29	81 31	96 31	26 30	57.3 32
3 AR 857-1-1	28 25	24 4	25 4	9 17	2 4	16 13	12 3	19 2	18 11	16.9 3
4 AR 857-1-2	14 12	25 5	26 6	4 4	3 11	16 10	19 5	22 4	14 4	15.7 2
5 AR 93019-2-1	11 7	46 18	36 12	6 9	3 13	25 27	25 14	54 18	19 17	25.0 16
6 AR93035-4-1	18 22	38 14	53 21	10 20	4 20	24 25	24 11	46 15	23 27	26.7 18
7 ARGE 97-1042-4-5	4 1	30 10	38 13	5 5	. .	12 3	24 13	40 11	23 25	19.2 9
8 ARGE 97-1033-3-5	9 4	20 3	16 1	2 1	1 2	14 6	11 2	14 1	8 1	10.7 1
9 ARGE 97-1048-3-6	10 5	19 2	29 7	3 2	2 5	18 17	16 4	45 14	17 9	17.7 7
10 ARGE 97-1038-3-5	16 16	36 13	34 10	5 6	4 18	13 5	23 10	37 9	16 5	20.4 11
11 ARGE 97-1047-4-2	15 13	28 6	24 3	6 10	1 1	10 2	22 9	34 7	13 3	17.0 5
12 B980416	18 19	43 15	34 11	3 3	2 10	15 9	26 15	30 5	19 14	21.1 12
13 B980582	7 2	29 9	25 5	5 7	2 6	9 1	21 7	51 17	19 18	18.7 8
14 B011066	11 6	28 7	31 8	6 11	3 14	20 19	24 12	31 6	18 13	19.2 10
15 B011117	12 9	18 1	40 16	5 8	4 21	15 7	21 8	20 3	21 20	17.2 6
16 GA 931587E53	17 18	71 27	61 27	13 23	2 7	37 32	84 32	97 32	22 23	44.8 27
17 GA 931630E48	33 26	44 17	48 19	16 28	. .	24 26	43 22	89 25	19 15	36.6 23
18 GA 94261E7	27 24	68 25	63 28	38 31	3 15	28 30	81 30	94 29	27 31	47.6 31
19 GA 931233A24	33 27	76 29	73 30	19 30	21 25	34 31	47 25	92 27	22 21	46.3 29
20 GA 941208E35	36 29	76 30	75 31	14 25	. .	15 8	65 28	93 28	23 26	46.8 30
21 MV 5-46	44 32	77 31	53 22	13 24	3 16	23 24	63 27	86 24	46 32	45.3 28
22 MV 15-42	23 23	77 32	53 23	9 18	. .	17 14	74 29	74 21	25 29	41.1 25
23 MV 27-78	43 31	55 23	51 20	14 26	4 19	20 18	43 21	81 23	19 19	36.6 24
24 NC98-26192	18 20	57 24	39 15	7 12	2 8	21 20	42 20	35 8	17 7	26.4 17
25 NC99-13296	16 15	49 20	45 18	10 21	. .	25 28	46 24	89 26	24 28	35.2 22
26 NC99-13308	12 10	53 21	33 9	10 22	3 12	22 23	28 17	44 13	16 6	24.5 15
27 VAN98W342	9 3	48 19	55 24	9 19	5 24	22 22	44 23	58 19	19 16	29.8 20
28 VA00W562	16 17	53 22	65 29	14 27	3 17	21 21	40 19	50 16	17 8	31.1 21
29 VA00W566	18 21	33 11	61 26	8 15	. .	12 4	28 16	74 22	22 22	29.2 19
30 VA01W461	13 11	28 8	16 2	7 13	5 22	18 15	11 1	39 10	17 10	17.0 4
31 VA02W713	15 14	35 12	38 14	8 16	2 9	16 11	37 18	42 12	23 24	23.9 14
32 VA02W732	40 30	70 26	56 25	16 29	5 23	18 16	56 26	95 30	18 12	41.5 26
Mean:	20	46	44	11	5	20	35	57	20	29.1
L.S.D. (0.05)	14	15	13	5	6	10	13	20	16	10.2
CV%	35	28	27	34	75	36	20	22	37	37.4

FHB SEVERITY GGE BIPLLOT ANALYSIS¹

Cultivar/ Designation	MEGA- ENVIRON.		W'STER OH		MEAN ALL LOC.	
	RANK	RANK	RANK	RANK	RANK	RANK
1 ERNIE	19.2	12	58	20	23.5	13
2 COKER 9835	52.4	32	96	31	57.3	32
3 AR 857-1-1	16.7	7	19	2	16.9	3
4 AR 857-1-2	14.9	6	22	4	15.7	2
5 AR 93019-2-1	21.4	14	54	18	25.0	16
6 AR93035-4-1	24.3	18	46	15	26.7	18
7 ARGE 97-1042-4-5	16.7	8	40	11	19.2	9
8 ARGE 97-1033-3-5	10.3	1	14	1	10.7	1
9 ARGE 97-1048-3-6	14.4	3	45	14	17.7	7
10 ARGE 97-1038-3-5	18.3	11	37	9	20.4	11
11 ARGE 97-1047-4-2	14.9	5	34	7	17.0	5
12 B980416	19.9	13	30	5	21.1	12
13 B980582	14.6	4	51	17	18.7	8
14 B011066	17.7	10	31	6	19.2	10
15 B011117	16.9	9	20	3	17.2	6
16 GA 931587E53	38.3	27	97	32	44.8	27
17 GA 931630E48	29.6	23	89	25	36.6	23
18 GA 94261E7	41.8	31	94	29	47.6	31
19 GA 931233A24	40.6	29	92	27	46.3	29
20 GA 941208E35	40.6	30	93	28	46.8	30
21 MV 5-46	40.2	28	86	24	45.3	28
22 MV 15-42	36.9	26	74	21	41.1	25
23 MV 27-78	31.1	24	81	23	36.6	24
24 NC98-26192	25.3	19	35	8	26.4	17
25 NC99-13296	27.9	21	89	26	35.2	22
26 NC99-13308	22.1	16	44	13	24.5	15
27 VAN98W342	26.3	20	58	19	29.8	20
28 VA00W562	28.7	22	50	16	31.1	21
29 VA00W566	23.2	17	74	22	29.2	19
30 VA01W461	14.3	2	39	10	17.0	4
31 VA02W713	21.7	15	42	12	23.9	14
32 VA02W732	34.7	25	95	30	41.5	26

Mean:	25.9	57	29.1
L.S.D. (0.05)	9.4	20	10.2
CV%	37.3	22	37.4



Although not strictly in a separate Mega-environment, the OH location had the largest within location standard deviation, and was investigated because of its discriminating ability relative to the other test locations. There was good agreement between the OH location and the mean severity over the other eight locations with respect to the most resistant genotypes. All seven of the entries not significantly different from the most resistant Entry 8 in OH were among the most resistant group over the remaining locations.

¹Yan et al., (2000). Crop Sci. 40:597-605.

**HEAD SEVERITY EXPRESSED AS AREA UNDER THE DISEASE PROGRESS CURVE (AUDPC).
FUNDULEA, ROMANIA**

	Cultivar/ Designation	AUDPC ¹	RANK
1	ERNIE	140	10
2	COKER 9835	460	21
3	AR 857-1-1	.	.
4	AR 857-1-2	.	.
5	AR 93019-2-1	628	24
6	AR93035-4-1	671	26
7	ARGE 97-1042-4-5	168	13
8	ARGE 97-1033-3-5	52	1
9	ARGE 97-1048-3-6	73	2
10	ARGE 97-1038-3-5	209	15
11	ARGE 97-1047-4-2	467	22
12	B980416	518	23
13	B980582	77	3
14	B011066	128	9
15	B011117	.	.
16	GA 931587E53	244	18
17	GA 931630E48	165	12
18	GA 94261E7	123	8
19	GA 931233A24	.	.
20	GA 941208E35	264	19
21	MV 5-46	669	25
22	MV 15-42	230	17
23	MV 27-78	209	16
24	NC98-26192	92	7
25	NC99-13296	208	14
26	NC99-13308	149	11
27	VAN98W342	80	5
28	VA00W562	78	4
29	VA00W566	.	.
30	VA01W461	.	.
31	VA02W713	278	20
32	VA02W732	88	6

Mean: 249
L.S.D. (0.05) 102

FHB Index (1-100)

Cultivar/ Designation	BAY		COL'BIA		K'STON		B'BURG		URBANA		W'STER		LEX'TON		SZEGED ¹		MEAN	
	AR		MO		NC		VA		IL		OH		KY		HUN		ALL LOC.	
	RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	3.5	8	6.1	14	0.1	.	5.0	7	14.3	8	58.1	20	6.0	2	18.0	7	13.9	9
2 COKER 9835	24.6	31	43.1	32	21.7	.	20.7	29	80.7	31	96.3	31	24.5	28	79.7	32	48.9	32
3 AR 857-1-1	8.4	19	7.3	17	0.1	.	8.3	14	8.6	3	17.6	2	18.9	23	18.9	8	11.0	5
4 AR 857-1-2	2.9	6	2.4	4	0.4	.	6.3	10	13.1	6	20.3	4	8.3	3	26.6	9	10.0	3
5 AR 93019-2-1	5.4	13	3.9	9	0.5	.	17.3	27	20.6	15	52.8	18	12.6	9	41.9	21	19.4	16
6 AR93035-4-1	8.2	17	8.4	20	1.1	.	14.0	22	20.0	13	45.3	15	21.5	26	68.1	30	23.3	21
7 ARGE 97-1042-4-5	0.7	1	2.7	5	.	.	3.3	2	19.5	11	39.8	11	13.5	14	11.2	3	10.2	4
8 ARGE 97-1033-3-5	0.7	2	1.4	1	0.2	.	4.0	5	6.8	2	14.1	1	5.3	1	3.1	1	4.5	1
9 ARGE 97-1048-3-6	2.9	5	1.5	3	0.1	.	8.0	12	11.5	5	44.6	14	14.6	15	33.5	13	14.6	11
10 ARGE 97-1038-3-5	5.1	12	3.2	7	0.3	.	6.0	9	18.1	10	36.9	9	12.8	11	15.3	5	12.2	7
11 ARGE 97-1047-4-2	3.3	7	4.4	11	0.0	.	3.7	3	15.4	9	34.3	7	9.2	4	8.2	2	9.8	2
12 B980416	8.1	16	1.4	2	0.2	.	5.0	8	20.3	14	29.3	5	15.3	16	31.8	12	13.9	10
13 B980582	2.2	3	3.0	6	0.1	.	2.0	1	14.2	7	51.3	17	10.7	7	14.7	4	12.3	8
14 B011066	5.5	14	4.2	10	0.5	.	9.7	15	19.7	12	30.6	6	12.6	10	46.8	22	16.2	13
15 B011117	4.8	10	3.7	8	1.0	.	6.3	11	11.2	4	18.8	3	13.2	12	34.5	15	11.7	6
16 GA 931587E53	12.7	23	11.9	25	0.1	.	31.3	32	88.1	32	96.8	32	19.2	24	55.1	27	39.4	29
17 GA 931630E48	18.0	26	13.1	29	.	.	17.0	26	35.7	21	88.8	25	16.6	20	38.2	19	29.7	24
18 GA 94261E7	18.6	27	38.3	31	0.4	.	24.3	30	80.0	30	94.0	29	26.7	30	62.1	28	43.1	31
19 GA 931233A24	19.7	29	17.6	30	8.2	.	28.7	31	40.7	23	88.9	26	15.5	17	78.3	31	37.2	28
20 GA 941208E35	41.1	32	10.8	24	.	.	4.7	6	63.6	28	93.4	28	24.9	29	64.7	29	40.5	30
21 MV 5-46	19.3	28	9.8	23	0.3	.	17.0	24	61.8	27	86.3	24	50.8	32	39.3	20	35.6	27
22 MV 15-42	13.5	24	7.3	18	.	.	11.0	18	72.3	29	73.5	21	26.9	31	36.5	17	31.6	25
23 MV 27-78	22.3	30	13.0	28	0.8	.	13.7	21	39.1	22	80.5	23	16.9	21	37.9	18	28.0	22
24 NC98-26192	7.1	15	6.2	15	0.1	.	13.3	20	35.7	20	35.1	8	13.4	13	17.3	6	16.0	12
25 NC99-13296	8.3	18	8.8	21	.	.	18.7	28	46.0	25	89.3	27	24.4	27	28.1	10	29.1	23
26 NC99-13308	4.4	9	9.3	22	0.3	.	10.7	17	26.9	17	43.6	13	10.3	5	34.1	14	17.5	15
27 VAN98W342	2.6	4	7.8	19	0.7	.	17.0	25	40.8	24	58.0	19	10.4	6	30.8	11	21.0	18
28 VA00W562	10.4	22	13.0	27	0.8	.	15.0	23	33.8	19	49.6	16	16.1	18	36.0	16	21.8	19
29 VA00W566	9.0	21	6.3	16	.	.	3.7	4	21.7	16	74.3	22	17.6	22	46.9	23	22.8	20
30 VA01W461	8.9	20	5.7	12	0.9	.	8.0	13	6.1	1	37.2	10	11.5	8	54.5	26	16.6	14
31 VA02W713	5.0	11	6.0	13	0.1	.	10.0	16	31.8	18	41.0	12	21.4	25	50.5	25	20.7	17
32 VA02W732	17.7	25	12.0	26	0.6	.	13.0	19	52.4	26	95.4	30	16.5	19	47.2	24	31.9	26

Mean:	10.2	9.2	1.7	11.8	29.9	57.0	16.8	37.8	22.7
L.S.D. (0.05)	10.4	10.7	5.8	62.1	12.5	20.5	20.0	2.14	11.7
CV%	50.0	41.4	77.8	10.0	22.9	22.0	61.4	.	52.5

¹DATA BY INDIVIDUAL ISOLATES ON FOLLOWING PAGE.

**INDEX BY INDIVIDUAL ISOLATES,
SZEGED, HUNGARY**

Cultivar/ Designation	<i>F. gramin.</i> Isol. 12377		<i>F. gramin.</i> Isol. 44		<i>F. culmor.</i> Isol. 12375		<i>F. culmor.</i> Isol. 12551		MEAN All Isol.	
		RANK		RANK		RANK		RANK		RANK
1 ERNIE	11	5	11	5	12	9	37	7	18.0	7
2 COKER 9835	75	32	70	32	83	32	91	31	79.7	32
3 AR 857-1-1	14	6	6	3	12	8	44	8	18.9	8
4 AR 857-1-2	23	10	15	9	24	15	45	9	26.6	9
5 AR 93019-2-1	38	20	32	17	36	21	63	22	41.9	21
6 AR93035-4-1	67	30	61	29	62	30	83	29	68.1	30
7 ARGE 97-1042-4-5	11	4	8	4	6	2	20	3	11.2	3
8 ARGE 97-1033-3-5	1	1	2	1	1	1	9	1	3.1	1
9 ARGE 97-1048-3-6	23	12	29	14	36	20	47	12	33.5	13
10 ARGE 97-1038-3-5	14	7	14	8	9	5	24	5	15.3	5
11 ARGE 97-1047-4-2	4	2	5	2	8	4	16	2	8.2	2
12 B980416	36	18	36	21	10	7	45	10	31.8	12
13 B980582	15	8	14	6	6	3	24	4	14.7	4
14 B011066	52	26	42	24	34	19	59	21	46.8	22
15 B011117	27	13	21	11	31	18	59	20	34.5	15
16 GA 931587E53	50	25	43	25	51	29	77	27	55.1	27
17 GA 931630E48	35	17	32	18	28	16	58	16	38.2	19
18 GA 94261E7	65	29	60	28	44	25	79	28	62.1	28
19 GA 931233A24	72	31	67	31	82	31	93	32	78.3	31
20 GA 941208E35	64	28	62	30	47	26	86	30	64.7	29
21 MV 5-46	31	14	29	15	30	17	68	25	39.3	20
22 MV 15-42	36	19	33	19	19	10	58	19	36.5	17
23 MV 27-78	38	21	33	20	22	12	58	17	37.9	18
24 NC98-26192	11	3	14	7	10	6	34	6	17.3	6
25 NC99-13296	21	9	18	10	23	13	51	14	28.1	10
26 NC99-13308	34	16	31	16	23	14	49	13	34.1	14
27 VAN98W342	32	15	22	12	22	11	46	11	30.8	11
28 VA00W562	23	11	23	13	42	24	56	15	36.0	16
29 VA00W566	42	22	40	23	39	23	67	24	46.9	23
30 VA01W461	57	27	40	22	51	28	71	26	54.5	26
31 VA02W713	45	23	43	26	48	27	66	23	50.5	25
32 VA02W732	45	24	48	27	37	22	58	18	47.2	24
Mean:	35		31		31		54		37.8	
L.S.D. (0.05)	.		.		.		.		2.1	

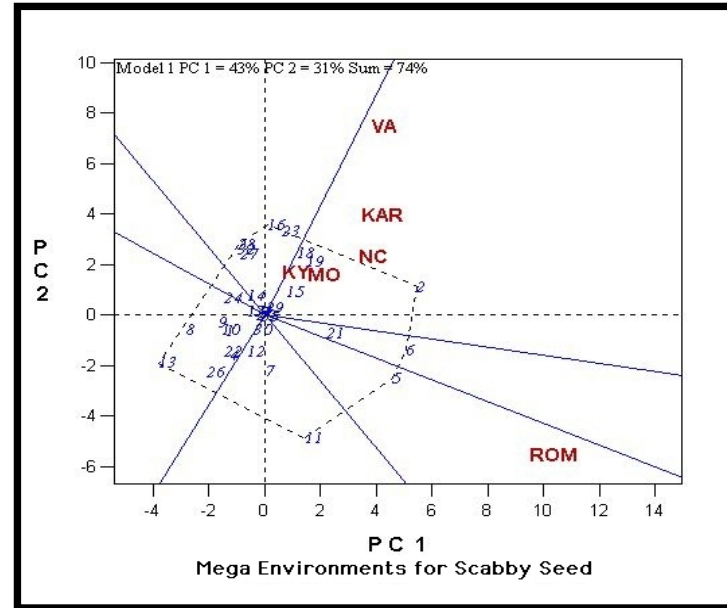
Scabby Seed %

Cultivar/ Designation	COL'BIA MO		K'STON NC		B'BURG VA		KIBLER AR		LEX'TON KY		FUN'LEA ROM		MEAN ALL LOC.	
	RANK		RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	1	1	18	13	46	11	71	8	9	10	20	12	27.6	8
2 COKER 9835	29	32	44	25	83	32	100	32	17	21	75	24	58.0	32
3 AR 857-1-1	2	4	18	12	66	23	70	7	5	2	.	.	32.1	14
4 AR 857-1-2	1	1	7	3	52	13	53	1	9	9	.	.	23.4	3
5 AR 93019-2-1	4	14	27	18	58	20	83	17	19	23	89	26	46.7	30
6 AR93035-4-1	4	14	38	22	67	24	90	25	13	15	86	25	49.6	31
7 ARGE 97-1042-4-5	2	4	.	.	27	2	88	21	9	7	40	21	30.2	10
8 ARGE 97-1033-3-5	1	1	14	10	40	9	59	5	30	27	7	2	25.2	4
9 ARGE 97-1048-3-6	2	4	9	6	45	10	83	16	7	5	16	9	27.0	6
10 ARGE 97-1038-3-5	2	4	17	11	39	8	83	15	6	3	17	11	27.3	7
11 ARGE 97-1047-4-2	2	4	9	7	24	1	68	6	16	20	72	23	31.9	12
12 B980416	3	10	12	9	33	5	81	14	36	29	32	20	32.9	16
13 B980582	2	4	8	5	28	3	54	2	4	1	4	1	16.6	1
14 B011066	3	10	38	23	49	12	88	22	9	8	16	10	33.7	20
15 B011117	3	10	35	21	57	18	95	29	15	19	.	.	40.2	23
16 GA 931587E53	12	30	30	20	79	30	88	24	51	32	12	7	45.4	27
17 GA 931630E48	7	27	.	.	55	16	75	9	12	13	23	14	31.5	11
18 GA 94261E7	28	31	19	15	80	31	90	27	24	25	29	18	44.9	26
19 GA 931233A24	8	28	42	24	70	25	100	31	12	14	.	.	45.6	29
20 GA 941208E35	4	14	.	.	37	7	95	28	48	31	26	16	41.2	25
21 MV 5-46	5	23	19	17	63	22	83	19	18	22	57	22	40.9	24
22 MV 15-42	4	14	.	.	29	4	78	10	13	17	22	13	26.4	5
23 MV 27-78	10	29	45	26	74	26	95	30	33	28	15	8	45.4	28
24 NC98-26192	4	14	19	16	53	14	80	13	13	16	12	6	30.1	9
25 NC99-13296	4	14	.	.	57	19	78	12	6	4	29	19	32.1	13
26 NC99-13308	4	14	6	1	34	6	56	3	15	18	24	15	23.1	2
27 VAN98W342	5	23	6	2	79	29	88	23	10	12	11	5	33.2	17
28 VA00W562	5	23	18	14	77	27	85	20	20	24	7	3	35.4	21
29 VA00W566	3	10	.	.	56	17	78	11	37	30	.	.	38.8	22
30 VA01W461	6	26	30	19	54	15	56	4	25	26	.	.	33.3	18
31 VA02W713	4	14	7	4	60	21	83	18	10	11	28	17	32.2	15
32 VA02W732	4	14	12	8	77	28	90	26	8	6	8	4	33.4	19
Mean:	5		21		55		81		18		30		34.8	
L.S.D. (0.05)	7		26		19		13		.		10		15.2	
CV%	91		62		26		.		45		.		38.1	

Scabby Seed % GGE BIPLLOT ANALYSIS¹

Cultivar/ Designation	MEGA- ENVIRON. 1		MEGA- ENVIRON. 2		MEAN ALL LOC. RANK
	RANK	RANK	RANK	RANK	
1 ERNIE	29	8	20	12	27.6
2 COKER 9835	55	32	75	24	58.0
3 AR 857-1-1	32	11	.	.	32.1
4 AR 857-1-2	24	4	.	.	23.4
5 AR 93019-2-1	38	21	89	26	46.7
6 AR93035-4-1	42	26	86	25	49.6
7 ARGE 97-1042-4-5	28	6	40	21	30.2
8 ARGE 97-1033-3-5	29	7	7	2	25.2
9 ARGE 97-1048-3-6	29	9	16	9	27.0
10 ARGE 97-1038-3-5	29	10	17	11	27.3
11 ARGE 97-1047-4-2	24	3	72	23	31.9
12 B980416	33	14	32	20	32.9
13 B980582	19	1	4	1	16.6
14 B011066	37	18	16	10	33.7
15 B011117	41	25	.	.	40.2
16 GA 931587E53	52	31	12	7	45.4
17 GA 931630E48	34	15	23	14	31.5
18 GA 94261E7	48	29	29	18	44.9
19 GA 931233A24	46	28	.	.	45.6
20 GA 941208E35	42	27	26	16	41.2
21 MV 5-46	38	20	57	22	40.9
22 MV 15-42	27	5	22	13	26.4
23 MV 27-78	52	30	15	8	45.4
24 NC98-26192	34	16	12	6	30.1
25 NC99-13296	33	12	29	19	32.1
26 NC99-13308	23	2	24	15	23.1
27 VAN98W342	38	19	11	5	33.2
28 VA00W562	41	24	7	3	35.4
29 VA00W566	40	23	.	.	38.8
30 VA01W461	34	17	.	.	33.3
31 VA02W713	33	13	28	17	32.2
32 VA02W732	38	22	8	4	33.4

Mean:	36.3	30	34.8
L.S.D. (0.05)	13.2	10	15.2
CV%	29.2	.	38.1



Two Mega-environments were identified for Scabby Seed Percent:
Mega-environment 1: VA, AR (Kibler), NC, KY, MO.
Mega-environment 2: Romania alone.

Ten entries were not significantly different from B980582 (Entry 13), the most resistant line in Mega-environment 1. B980582 was the most resistant entry in Mega-environment 2, also. The Va location exhibited the most discriminating ability within mega-environment 1.

¹Yan et al., (2000) Crop Sci. 40:597-605

GRAIN QUALITY

Cultivar/ Designation	GRAIN RATING ¹		GRAIN QUALITY ²		RELATIVE GR. WT. ³		1000 GR. WT.		TEST WEIGHT		GRAIN EVAL. ⁴	%WET GLUTEN ⁵	HARD-NESS ⁵
	URBANA		K'STON		FUN'LEA		SZEGED		COL'BIA		SZEGED	SZEGED	SZEGED
	IL	RANK	NC	RANK	ROM	RANK	HUN	RANK	MO	RANK	HUN	HUN	HUN
1 ERNIE	3.7	3	1.3	4	85	12	35.8	15	58.3	18	vb5	27.1	5.0
2 COKER 9835	8.3	28	3.8	26	74	16	31.3	27	48.7	32	bsb4.5	.	.
3 AR 857-1-1	4.3	8	1.8	15	.	.	41.0	5	58.0	19	b4.5	34.7	15.2
4 AR 857-1-2	3.7	4	1.8	15	.	.	36.8	13	55.0	26	b4A1	33.8	14.1
5 AR 93019-2-1	7.0	23	2.3	19	43	24	34.8	18	58.5	16	b4A1	30.6	15.9
6 AR93035-4-1	4.3	9	2.0	17	24	26	34.2	20	58.0	20	bsb4	25.0	45.1
7 ARGE 97-1042-4-5	5.3	16	.	.	74	17	37.9	10	61.0	2	b4	34.3	33.0
8 ARGE 97-1033-3-5	4.7	12	1.5	8	99	1	31.2	29	59.5	8	bsb5A5	29.1	27.7
9 ARGE 97-1048-3-6	3.3	2	1.3	4	97	4	41.3	4	52.7	30	b4.5	33.0	30.2
10 ARGE 97-1038-3-5	3.7	5	1.5	8	86	11	35.2	16	59.6	5	b5	30.2	12.4
11 ARGE 97-1047-4-2	3.7	6	1.5	8	39	25	43.1	2	59.6	6	b5	32.6	12.1
12 B980416	6.7	22	1.5	8	63	20	27.9	31	59.0	12	b5	22.1	0.57
13 B980582	2.7	1	1.0	1	97	5	34.8	19	61.2	1	b5	.	.
14 B011066	4.3	10	3.0	22	90	7	30.8	30	59.6	7	b3-5	28.9	22.3
15 B011117	5.0	13	3.0	22	.	.	43.5	1	59.3	11	bsb4.5	33.7	44.4
16 GA 931587E53	8.3	29	2.0	17	89	8	34.0	23	55.8	24	vb4.5	27.5	6.92
17 GA 931630E48	6.3	19	.	.	81	13	37.1	12	56.6	23	bsb4-5	26.3	13.5
18 GA 94261E7	8.7	31	1.3	4	93	6	32.4	24	53.7	29	vb-sb5	29.8	4.27
19 GA 931233A24	7.0	24	3.0	22	.	.	31.7	25	54.6	27	vb5	29.6	17.2
20 GA 941208E35	8.3	30	.	.	62	21	26.5	32	58.8	14	vb5	27.5	13.4
21 MV 5-46	8.7	32	1.0	1	44	23	37.3	11	59.4	9	b4	28.3	28.8
22 MV 15-42	7.7	26	.	.	77	15	42.8	3	57.5	21	b5!	30.3	20.8
23 MV 27-78	6.3	20	2.3	19	81	14	36.0	14	53.9	28	bsb4.5A1	28.8	29.0
24 NC98-26192	6.3	21	1.5	8	67	19	38.8	7	58.5	17	vb5	.	.
25 NC99-13296	5.0	14	.	.	70	18	31.3	28	58.7	15	f5	26.2	0.55
26 NC99-13308	4.0	7	1.3	4	99	2	38.4	9	59.8	4	b5	28.9	2.74
27 VAN98W342	7.7	27	1.5	8	98	3	35.2	17	56.8	22	b4	26.0	6.69
28 VA00W562	6.0	17	2.8	21	89	9	34.2	21	55.2	25	b5	27.2	15.8
29 VA00W566	6.0	18	.	.	.	.	38.5	8	52.5	31	f5	29.2	21.3
30 VA01W461	4.3	11	3.0	22	.	.	40.9	6	59.4	10	bsb4.5	33.5	33.3
31 VA02W713	5.0	15	1.0	1	61	22	34.2	22	61.0	3	b5	21.1	20.9
32 VA02W732	7.0	25	1.5	8	87	10	31.5	26	58.9	13	bsb4.5A5	27.5	17.4
Mean:	5.2		1.9		76		36		57.5		.	29.1	18.3
L.S.D. (0.05)	1.8		1.1		13.2		.		5.8		.	.	.
CV%	21.7		29.9		.		.		7.2		.	.	.

¹SCALE OF 0-9. ²SCALE OF 1-5. ³(INOCULATED / UNINOCULATED)*100.

⁴vb=LIGHT BROWN, b=BROWN, vb=DARK BROWN, bsb=BROWN-DARK-BROWN, f=WHITE. 1=VERY SHRIVELLED 5=NO SHRIVELLING.

⁵NIR.

**Vomitoxin (DON)*
(ppm)**

Cultivar/ Designation	BAY		K'STON		B'BURG		LEX'TON		URBANA		MEAN ALL LOC.	
	AR		NC		VA		KY		IL			
	RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	2.2	16	0.0	1	6.5	18	17.3	26	32.5	22	11.7	22
2 COKER 9835	4.4	26	7.0	24	13.0	27	21.3	31	52.5	28	19.6	29
3 AR 857-1-1	3.5	23	0.5	11	3.8	8	10.0	7	8.5	2	5.2	2
4 AR 857-1-2	1.7	11	0.6	14	2.9	6	11.3	10	11.0	5	5.5	6
5 AR 93019-2-1	2.3	17	5.0	23	6.7	20	16.7	24	24.0	16	10.9	20
6 AR93035-4-1	2.2	15	4.4	22	5.3	13	16.7	23	15.5	10	8.8	13
7 ARGE 97-1042-4-5	1.0	3	.	.	3.6	7	9.7	5	19.0	12	6.3	8
8 ARGE 97-1033-3-5	1.6	9	1.8	15	4.1	9	9.0	4	10.5	4	5.4	5
9 ARGE 97-1048-3-6	3.7	25	1.8	15	4.3	10	8.3	2	8.0	1	5.2	3
10 ARGE 97-1038-3-5	1.5	6	0.5	11	4.7	12	6.7	1	17.5	11	6.1	7
11 ARGE 97-1047-4-2	1.7	10	0.0	1	2.1	3	8.7	3	14.0	9	5.3	4
12 B980416	1.3	4	1.8	15	4.6	11	11.3	11	19.5	13	7.7	10
13 B980582	1.6	7	0.0	1	1.9	1	11.0	9	9.0	3	4.7	1
14 B011066	2.6	19	4.2	21	2.5	4	16.4	22	11.0	6	7.3	9
15 B011117	5.4	30	10.0	25	2.7	5	18.1	28	11.0	7	9.4	14
16 GA 931587E53	3.6	24	0.0	1	16.3	30	16.0	21	90.0	32	25.2	32
17 GA 931630E48	2.6	20	.	.	14.3	29	18.3	29	40.0	27	16.7	28
18 GA 94261E7	2.5	18	2.0	18	16.3	31	22.7	32	72.5	31	23.2	31
19 GA 931233A24	8.7	32	11.0	26	13.0	28	17.7	27	30.0	21	16.1	26
20 GA 941208E35	8.4	31	.	.	1.9	2	14.3	16	62.5	30	19.7	30
21 MV 5-46	2.1	14	0.0	1	9.7	25	15.0	20	52.5	29	15.9	25
22 MV 15-42	5.4	29	.	.	5.7	15	18.7	30	35.0	24	14.1	24
23 MV 27-78	1.6	8	0.0	1	7.0	21	14.3	17	26.5	19	9.9	17
24 NC98-26192	0.6	1	0.5	11	7.8	22	17.0	25	23.5	15	9.8	16
25 NC99-13296	3.2	22	.	.	18.8	32	13.0	12	37.5	26	16.1	27
26 NC99-13308	0.9	2	0.0	1	5.7	14	14.7	18	20.0	14	8.3	12
27 VAN98W342	2.1	13	0.0	1	12.3	26	9.7	6	24.5	17	9.7	15
28 VA00W562	4.6	27	2.8	19	6.5	19	14.7	19	25.0	18	10.7	19
29 VA00W566	5.3	28	.	.	9.3	24	10.3	8	32.5	23	12.3	23
30 VA01W461	2.8	21	4.0	20	6.3	17	14.0	14	11.5	8	7.7	11
31 VA02W713	1.7	12	0.0	1	7.9	23	14.0	15	27.5	20	10.2	18
32 VA02W732	1.5	5	0.0	1	6.3	16	14.0	13	35.0	25	11.4	21
Mean:	2.9		2.2		7.3		14		26.1		11.3	
L.S.D. (0.05)	3		.		54.9		11.5		11.1		10.8	
CV%	51		.		5.5		4.1		21.0		76.9	

*DON analysis conducted by Pat Hart's laboratory at Michigan State University.

Greenhouse Screening¹

Cultivar/ Designation	NC SEVERITY		VA SEVERITY		AR SEVERITY		KY SEVERITY		MO SEVERITY		MEAN ALL LOC.		NC SPREAD		MO SPREAD		MEAN SPREAD	
	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK
1 ERNIE	9	9	4	1	18	12	19	1	23	14	14.6	2	1.4	8	2.3	10	1.8	6
2 COKER 9835	17	14	23	11	57	28	61	18	74	30	46.2	24	2.9	15	11.1	32	7.0	28
3 AR 857-1-1	16	12	38	24	57	29	30	3	11	5	30.5	14	2.3	11	1.2	2	1.7	4
4 AR 857-1-2	18	17	66	29	75	31	63	21	30	20	50.7	27	2.5	12	3.8	19	3.2	16
5 AR 93019-2-1	52	31	34	22	49	27	83	31	47	25	52.9	30	7.8	29	6.9	27	7.3	29
6 AR93035-4-1	17	13	29	19	34	20	68	23	19	11	33.3	18	3.3	16	2.8	13	3.0	15
7 ARGE 97-1042-4-5	38	27	7	3	9	2	40	5	21	12	22.9	3	6.9	28	3.0	15	4.9	23
8 ARGE 97-1033-3-5	15	11	6	2	6	1	38	4	6	1	14.3	1	3.6	18	0.9	1	2.3	10
9 ARGE 97-1048-3-6	4	1	38	25	12	6	52	12	9	2	23.0	5	0.8	2	1.2	3	1.0	1
10 ARGE 97-1038-3-5	4	2	26	16	32	19	92	32	21	13	35.0	22	0.8	3	3.1	16	1.9	7
11 ARGE 97-1047-4-2	9	8	64	28	35	21	70	24	44	24	44.3	23	1.5	9	5.6	22	3.6	19
12 B980416	4	3	18	5	10	3	57	14	26	16	23.0	4	0.6	1	3.5	18	2.1	8
13 B980582	22	20	25	15	22	16	40	6	13	6	24.2	6	3.5	17	1.8	7	2.7	11
14 B011066	22	21	20	9	15	9	51	11	13	7	24.4	8	4.0	21	1.9	8	3.0	13
15 B011117	5	5	75	30	11	4	70	25	11	4	34.4	20	0.9	4	1.5	5	1.2	2
16 GA 931587E53	18	16	27	17	17	11	46	8	48	27	31.2	15	3.8	19	5.9	24	4.8	21
17 GA 931630E48	49	29	19	6	41	25	73	27	73	29	51.0	28	8.9	31	10.4	30	9.6	32
18 GA 94261E7	17	15	31	20	48	26	57	13	82	32	46.9	25	2.8	13	9.1	29	5.9	25
19 GA 931233A24	74	32	84	32	81	32	60	17	53	28	70.6	32	10.9	32	7.1	28	9.0	31
20 GA 941208E35	49	30	47	26	60	30	63	20	48	26	53.4	31	6.5	26	5.6	23	6.1	26
21 MV 5-46	19	19	78	31	23	17	62	19	77	31	52.1	29	4.3	22	10.6	31	7.4	30
22 MV 15-42	26	23	34	23	20	14	23	2	27	18	26.2	11	4.4	23	3.8	20	4.1	20
23 MV 27-78	38	26	48	27	39	23	73	28	42	23	47.9	26	6.8	27	6.4	26	6.6	27
24 NC98-26192	29	25	23	12	11	5	67	22	36	21	33.3	17	5.1	25	4.6	21	4.9	22
25 NC99-13296	47	28	10	4	16	10	73	26	10	3	31.3	16	8.6	30	1.3	4	5.0	24
26 NC99-13308	25	22	32	21	20	15	59	16	14	8	30.0	13	3.9	20	1.5	6	2.7	12
27 VAN98W342	19	18	19	7	20	13	58	15	26	17	28.6	12	2.8	14	3.2	17	3.0	14
28 VA00W562	11	10	24	14	13	7	46	7	28	19	24.3	7	1.5	10	2.9	14	2.2	9
29 VA00W566	6	7	22	10	40	24	77	30	25	15	34.0	19	1.1	7	2.4	11	1.8	5
30 VA01W461	5	4	20	8	38	22	49	10	16	10	25.5	10	0.9	5	2.5	12	1.7	3
31 VA02W713	26	24	23	13	14	8	47	9	15	9	25.0	9	4.6	24	1.9	9	3.3	17
32 VA02W732	5	6	28	18	26	18	76	29	38	22	34.7	21	0.9	6	5.9	25	3.4	18

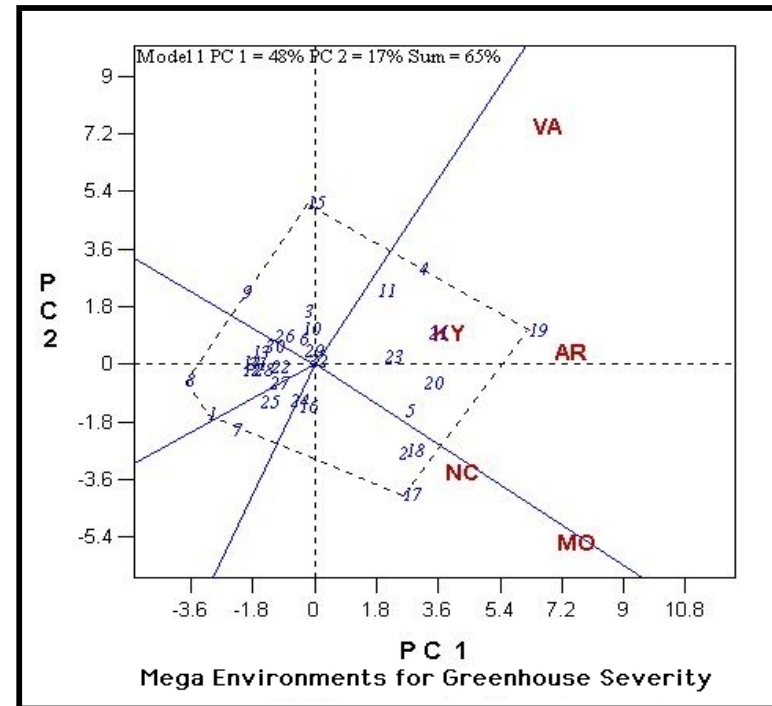
Mean:	22	34	30	58	32	35	3.8	4.2	4.0
L.S.D. (0.05)	.	.	30	29	.	20	.	.	4.5
CV%	.	.	.	22	.	46	.	.	57.2

¹Severity data based on the percentage of infected spikelets/total spikelets 21 to 28 days post inoculation.
Spread = total number of diseased spikelets in a head.

Greenhouse Head Severity GGE Biplot Analysis¹

Cultivar/ Designation	MEGA- ENVIRON. 1		MEGA- ENVIRON. 2		MEAN ALL LOC.	
	RANK	RANK	RANK	RANK	RANK	RANK
1 ERNIE	14	1	16	9	18	12
2 COKER 9835	47	23	45	26	57	28
3 AR 857-1-1	42	17	14	6	57	29
4 AR 857-1-2	68	31	24	18	75	31
5 AR 93019-2-1	55	28	49	29	49	27
6 AR93035-4-1	44	19	18	11	34	20
7 ARGE 97-1042-4-5	19	3	29	22	9	2
8 ARGE 97-1033-3-5	17	2	11	4	6	1
9 ARGE 97-1048-3-6	34	14	7	1	12	6
10 ARGE 97-1038-3-5	50	24	12	5	32	19
11 ARGE 97-1047-4-2	56	29	26	19	35	21
12 B980416	28	7	15	7	10	3
13 B980582	29	9	17	10	22	16
14 B011066	29	8	18	12	15	9
15 B011117	52	25	8	2	11	4
16 GA 931587E53	30	10	33	24	17	11
17 GA 931630E48	44	20	61	31	41	25
18 GA 94261E7	45	21	50	30	48	26
19 GA 931233A24	75	32	64	32	81	32
20 GA 941208E35	57	30	49	28	60	30
21 MV 5-46	55	27	48	27	23	17
22 MV 15-42	26	4	27	20	20	14
23 MV 27-78	54	26	40	25	39	23
24 NC98-26192	34	13	33	23	11	5
25 NC99-13296	33	12	28	21	16	10
26 NC99-13308	37	16	19	14	20	15
27 VAN98W342	32	11	23	17	20	13
28 VA00W562	28	5	19	13	13	7
29 VA00W566	46	22	16	8	40	24
30 VA01W461	36	15	10	3	38	22
31 VA02W713	28	6	20	15	14	8
32 VA02W732	44	18	22	16	26	18

Mean:	40	27	30.2
L.S.D. (0.05)	24.9	31.7	20.0
CV%	38.8	59.5	45.6



Two Mega-environments were identified in the Greenhouse Head Severity evaluations:

Mega-environment 1: AR (Bay), KY and VA.

Mega-environment 2: NC and MO.

The most resistant entry in Mega-environment 1 (Ernie) was ranked ninth in Mega-environment 2.

The most resistant entry in Mega-environment 2 (Entry 9) was ranked fourteenth in Mega-environment 1.

But both entries were within the most resistant groups in their respective Mega-environments.

The largest change in rankings between the two Mega-environments were for Entries 7, 10, 15 and 22

¹Yan *et al.*, (2000) Crop Sci. 40:597-605

Greenhouse (Rachis Involvement)¹

Cultivar/ Designation	COL'BIA MO	RALEIGH NC
1 ERNIE	1.0	0.5
2 COKER 9835	0.9	0.0
3 AR 857-1-1	0.9	0.0
4 AR 857-1-2	0.9	0.3
5 AR 93019-2-1	0.9	0.0
6 AR93035-4-1	0.9	0.3
7 ARGE 97-1042-4-5	0.9	0.3
8 ARGE 97-1033-3-5	0.8	0.3
9 ARGE 97-1048-3-6	0.6	0.5
10 ARGE 97-1038-3-5	0.8	0.3
11 ARGE 97-1047-4-2	0.9	0.5
12 B980416	1.0	0.0
13 B980582	0.3	0.0
14 B011066	0.6	0.3
15 B011117	0.4	0.5
16 GA 931587E53	0.9	0.3
17 GA 931630E48	1.0	0.8
18 GA 94261E7	1.0	0.3
19 GA 931233A24	0.9	0.3
20 GA 941208E35	1.0	0.3
21 MV 5-46	1.0	0.3
22 MV 15-42	0.8	0.1
23 MV 27-78	0.8	0.3
24 NC98-26192	0.5	0.5
25 NC99-13296	0.5	0.3
26 NC99-13308	0.9	0.5
27 VAN98W342	0.9	0.5
28 VA00W562	0.8	0.3
29 VA00W566	0.9	0.3
30 VA01W461	0.6	0.3
31 VA02W713	1.0	0.3
32 VA02W732	0.8	0.3
Mean:	0.80	0.28

¹Records whether the rachis on an individual head had disease where 0=no rachis involvement and 1=rachis showed symptoms.

DETACHED LEAF EVALUATIONS DUBLIN, IRELAND

	Cultivar/ Designation	Incubation Period ¹ (days)	Latent Period ¹ (days)	RANK
1	ERNIE	2.0	5.8	32
2	COKER 9835	2.7	6.3	27
3	AR 857-1-1	2.6	8.3	4
4	AR 857-1-2	2.5	7.9	7
5	AR 93019-2-1	3.6	6.7	19
6	AR93035-4-1	3.4	6.4	25
7	ARGE 97-1042-4-5	2.6	5.9	30
8	ARGE 97-1033-3-5	3.3	6.5	22
9	ARGE 97-1048-3-6	2.3	6.4	24
10	ARGE 97-1038-3-5	2.6	7.2	14
11	ARGE 97-1047-4-2	2.8	6.8	18
12	B980416	3.2	7.5	13
13	B980582	2.7	6.5	23
14	B011066	2.2	6.0	29
15	B011117	2.5	9.6	1
16	GA 931587E53	3.4	6.4	26
17	GA 931630E48	2.7	6.1	28
18	GA 94261E7	3.2	7.8	10
19	GA 931233A24	2.9	7.9	8
20	GA 941208E35	3.1	7.1	15
21	MV 5-46	2.9	6.7	20
22	MV 15-42	2.7	8.0	6
23	MV 27-78	3.3	6.6	21
24	NC98-26192	2.8	5.8	31
25	NC99-13296	2.4	7.0	16
26	NC99-13308	2.3	8.6	2
27	VAN98W342	3.5	7.8	9
28	VA00W562	3.3	7.6	12
29	VA00W566	3.5	8.2	5
30	VA01W461	3.0	8.6	3
31	VA02W713	2.6	6.9	17
32	VA02W732	2.4	7.7	11
	MDV11-52	4.0	9.4	.
	VA01W476	1.7	8.7	.
	VA00W562	3.6	8.1	.
	McCORMICK	3.1	7.2	.
	NC-NEUSE	3.3	7.3	.
	PAT	3.5	7.1	.
	ROANE	2.6	7.7	.
	Mean	2.9	7.3	
	LSD. (0.05)	0.8	1.7	
	C.V. (%)	21.4	18.6	

¹ Based on inoculation with five isolates of *M. nivale var. majus* as described by Browne and Cooke (2004), European J. Plant. Path (in press).

Heading Date (Julian Days*)

CULTIVAR/ DESIGNATION	BAY AR		COLUMBIA MO		KINSTON NC		B'BURG VA		URBANA IL		WOOSTER OH		LEX'TON KY		FUN'LEA ROM		SZEGED HUN		MEAN ALL LOC.	
	RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	120	5	129	1	116	13	129	12	131	1	143	20	126	2	137	1	131	2	129	2
2 COKER 9835	124	29	133	27	119	22	134	31	137	31	147	31	130	29	140	5	134	20	133	29
3 AR 857-1-1	123	26	131	10	118	18	129	13	137	28	143	21	127	3	.	.	134	21	132	25
4 AR 857-1-2	122	22	133	22	119	20	130	20	136	22	145	27	127	4	.	.	134	22	132	26
5 AR 93019-2-1	123	28	133	28	121	24	133	29	137	29	148	32	128	15	143	10	136	32	134	30
6 AR93035-4-1	122	23	133	23	119	23	131	28	137	26	145	28	128	16	143	11	134	23	132	27
7 ARGE 97-1042-4-5	118	1	133	24	.	.	128	4	132	3	141	1	128	17	144	14	132	8	130	9
8 ARGE 97-1033-3-5	121	19	133	26	119	21	130	24	135	19	143	22	128	18	145	16	132	9	132	23
9 ARGE 97-1048-3-6	121	13	131	12	118	19	130	25	137	27	142	14	127	5	145	17	134	24	132	22
10 ARGE 97-1038-3-5	121	20	131	7	115	8	128	7	134	10	142	15	128	19	140	6	131	3	130	8
11 ARGE 97-1047-4-2	121	14	131	13	112	1	124	1	133	6	142	16	125	1	143	12	131	4	129	1
12 B980416	122	24	132	18	118	16	129	17	135	18	143	23	128	20	137	2	132	10	131	16
13 B980582	120	8	131	8	117	14	129	14	133	7	146	30	129	25	146	23	132	11	131	20
14 B011066	126	31	133	29	123	26	135	32	137	30	144	26	129	26	145	18	134	25	134	31
15 B011117	126	32	133	30	121	25	133	30	142	32	143	24	130	30	151	27	135	31	135	32
16 GA 931587E53	120	9	132	15	114	5	129	18	133	8	142	17	127	6	139	3	133	14	130	6
17 GA 931630E48	119	4	130	3	.	.	128	8	132	4	142	18	130	31	146	24	131	5	130	12
18 GA 94261E7	121	15	133	31	115	11	129	9	133	9	141	2	127	7	.	.	133	15	131	14
19 GA 931233A24	124	30	132	19	117	15	130	22	135	16	145	29	129	27	147	25	134	26	133	28
20 GA 941208E35	123	27	129	2	.	.	127	2	131	2	143	25	127	8	139	4	132	12	130	3
21 MV 5-46	121	16	130	4	113	2	129	10	134	13	141	3	127	9	140	7	133	16	130	5
22 MV 15-42	120	10	130	5	.	.	130	23	135	17	141	4	128	21	145	19	133	17	131	18
23 MV 27-78	121	21	132	17	115	9	130	21	136	25	141	5	127	10	144	15	134	27	131	19
24 NC98-26192	120	6	132	16	114	6	129	15	134	11	141	6	127	11	140	8	131	6	130	4
25 NC99-13296	118	2	131	14	.	.	128	5	134	14	141	7	131	32	140	9	130	1	130	7
26 NC99-13308	120	11	132	20	115	10	129	19	134	12	141	8	129	28	145	20	131	7	131	17
27 VAN98W342	120	12	132	21	113	3	129	16	135	20	141	9	127	12	145	21	133	18	131	15
28 VA00W562	121	17	133	32	115	12	130	26	135	21	142	19	128	22	150	26	132	13	132	24
29 VA00W566	121	18	130	6	.	.	127	3	136	23	141	10	127	13	.	.	134	28	130	13
30 VA01W461	122	25	133	25	118	17	130	27	136	24	141	11	128	23	.	.	133	19	132	21
31 VA02W713	120	7	131	11	113	4	129	11	132	5	141	12	127	14	143	13	134	29	130	10
32 VA02W732	118	3	131	9	114	7	128	6	134	15	141	13	128	24	145	22	134	30	130	11
Mean:	121		132		116		130		135		143		128		143		133		131	
L.S.D. (0.05)	3		3		2		2		2		.		2		.		.		2	
CV%	1		2.8		1		1		1		.		1		.		.		1	

*Days after December 31, 2001

Plant Height (in)

CULTIVAR/ DESIGNATION	COL'BIA MO		B'BURG VA		LEX'TON KY		SZEGED HUN		FUN'LEA ROM		MEAN ALL LOC.	
	RANK		RANK		RANK		RANK		RANK		RANK	
1 ERNIE	37	12	31	8	34	10	30	7	21	7	31	8
2 COKER 9835	30	1	31	5	33	5	30	4	21	6	29	3
3 AR 857-1-1	44	32	42	30	39	32	35	19	.	.	38	31
4 AR 857-1-2	43	30	43	31	39	29	34	15	.	.	37	30
5 AR 93019-2-1	43	31	43	32	39	30	45	32	29	24	40	32
6 AR93035-4-1	38	21	33	20	35	19	36	20	27	22	34	20
7 ARGE 97-1042-4-5	41	26	32	14	35	18	40	25	26	19	35	22
8 ARGE 97-1033-3-5	43	29	36	27	38	26	42	31	25	18	37	28
9 ARGE 97-1048-3-6	42	28	35	24	37	24	42	30	29	26	37	29
10 ARGE 97-1038-3-5	39	23	33	21	37	22	41	28	27	23	35	24
11 ARGE 97-1047-4-2	39	24	37	28	38	27	40	26	26	20	36	26
12 B980416	36	9	33	17	34	11	35	16	24	15	32	14
13 B980582	38	22	35	25	36	21	38	23	26	21	35	21
14 B011066	42	27	33	22	35	14	40	24	29	25	36	25
15 B011117	38	17	31	7	35	16	38	22	.	.	33	16
16 GA 931587E53	37	13	32	15	35	12	32	9	22	9	32	11
17 GA 931630E48	38	20	32	16	38	28	37	21	24	14	34	19
18 GA 94261E7	37	14	33	18	35	13	32	10	21	8	32	12
19 GA 931233A24	38	18	34	23	37	23	33	11	.	.	33	17
20 GA 941208E35	35	4	29	2	32	1	31	8	22	10	30	4
21 MV 5-46	35	5	32	10	32	3	29	2	25	16	31	7
22 MV 15-42	37	15	31	9	38	25	33	12	24	11	33	15
23 MV 27-78	36	6	32	11	34	9	30	6	18	2	30	6
24 NC98-26192	38	16	30	4	32	2	34	13	20	4	31	9
25 NC99-13296	36	7	32	12	32	4	34	14	20	5	31	10
26 NC99-13308	39	25	38	29	39	31	40	27	25	17	36	27
27 VAN98W342	35	3	29	3	34	8	28	1	17	1	29	2
28 VA00W562	37	11	31	6	33	7	30	5	19	3	30	5
29 VA00W566	31	2	28	1	33	6	29	3	.	.	28	1
30 VA01W461	36	10	36	26	35	15	42	29	.	.	35	23
31 VA02W713	38	19	33	19	36	20	35	18	24	13	33	18
32 VA02W732	36	8	32	13	35	17	35	17	24	12	32	13

Mean:	38	33	35	35	24	33
L.S.D. (0.05)	1	2	5	.	3	4
CV%	1	4	7	.	.	6

Leaf Diseases

CULTIVAR/ DESIGNATION	% STRIPE RUST F'VILLE ¹ AR	%SEPTORIA LEAF BLOTCH F'VILLE ¹ AR	% GREEN LEAVES KIBLER ² AR	POWDERY MILDEW		LEAF RUST SZEGED
				KINSTON ³ NC	SZEGED ⁴ HUN.	HUN.
1 ERNIE	19	50	14	4.0	0	mst
2 COKER 9835	31	50	26	3.0	0	0
3 AR 857-1-1	4	31	60	7.0	ms30,3	s30
4 AR 857-1-2	5	30	69	6.0	ms10,5	s20
5 AR 93019-2-1	1	15	83	4.0	mrt	ms30
6 AR93035-4-1	1	9	55	3.0	mrt	s60
7 ARGE 97-1042-4-5	0	19	50	.	0	0
8 ARGE 97-1033-3-5	0	10	60	4.5	ms5,3	mrt
9 ARGE 97-1048-3-6	5	21	78	7.0	ms15,5	0
10 ARGE 97-1038-3-5	0	28	76	4.5	ms5,5	mrt
11 ARGE 97-1047-4-2	0	35	83	4.0	mrt	0
12 B980416	8	35	56	2.5	0	mrt
13 B980582	4	23	44	3.5	ms10,3	0
14 B011066	13	19	45	4.0	ms20,3	0
15 B011117	2	35	65	7.0	ms30,5	0
16 GA 931587E53	0	87	21	1.5	ms5,3	0
17 GA 931630E48	0	35	60	.	ms20,3	0
18 GA 94261E7	8	36	41	2.0	0	0
19 GA 931233A24	0	28	78	3.0	ms3,5	0
20 GA 941208E35	0	61	78	.	0	0
21 MV 5-46	6	68	50	0.0	0	s50
22 MV 15-42	5	88	40	.	0	0
23 MV 27-78	0	82	10	0.5	0	0
24 NC98-26192	0	38	81	4.0	ms10,3	0
25 NC99-13296	0	13	51	.	0	ms5
26 NC99-13308	0	19	80	3.0	ms10,3	0
27 VAN98W342	1	89	5	.	0	s100
28 VA00W562	0	89	7	1.5	mrt	0
29 VA00W566	0	60	18	.	0	mst
30 VA01W461	0	19	87	1.0	0	mst
31 VA02W713	11	55	60	0.0	0	s50
32 VA02W732	0	73	81	0.0	0	0
Mean:	4	42	53	3	.	.
LSD (0.05)	4	17	22	.	.	.

¹Percentage of flag leaf diseased. Rated 5-28. ²Septoria tritici blotch was principle disease together with some stripe rust.

³0=Resistant, 9=Fully Susceptible.

⁴For example 'ms30.5' indicated genotype was moderately susceptible with 30% of flag-1 covered with pustules.

1=lower leaves, 3=flag-2, 5=flag-1, 7=flag leaf, 9=head.

GRAIN YIELD

CULTIVAR/ DESIGNATION	GRAIN YIELD (bu/ac) COLOMBIA MO		PLOT YIELD (kg/plot) SZEGED HUN		WINTER SURVIVAL (%) SZEGED HUN	
		RANK		RANK		RANK
1 ERNIE	62.4	15	2.6	26	60	20
2 COKER 9835	42.5	32	2.4	29	30	30
3 AR 857-1-1	64.8	12	1.2	31	15	31
4 AR 857-1-2	55.0	25	1.1	32	15	32
5 AR 93019-2-1	58.3	20	2.9	20	95	1
6 AR93035-4-1	58.3	21	2.9	16	80	3
7 ARGE 97-1042-4-5	83.4	1	2.8	22	70	10
8 ARGE 97-1033-3-5	70.9	8	2.6	27	50	25
9 ARGE 97-1048-3-6	53.6	26	2.7	23	40	29
10 ARGE 97-1038-3-5	73.2	6	3.3	3	80	4
11 ARGE 97-1047-4-2	67.0	10	3.0	10	70	11
12 B980416	79.3	3	3.5	2	70	12
13 B980582	82.4	2	3.3	4	90	2
14 B011066	74.4	5	2.9	17	70	13
15 B011117	62.3	16	3.2	5	70	14
16 GA 931587E53	57.8	22	3.1	8	80	5
17 GA 931630E48	51.3	28	2.9	18	50	26
18 GA 94261E7	49.6	30	3.0	12	60	21
19 GA 931233A24	56.8	24	3.0	14	70	15
20 GA 941208E35	67.9	9	3.0	15	80	6
21 MV 5-46	64.3	13	3.0	11	50	27
22 MV 15-42	58.5	19	3.1	6	50	28
23 MV 27-78	50.0	29	2.9	21	70	16
24 NC98-26192	57.3	23	3.0	13	80	7
25 NC99-13296	72.5	7	2.9	19	60	22
26 NC99-13308	63.5	14	2.2	30	60	23
27 VAN98W342	61.3	18	2.6	28	70	17
28 VA00W562	52.4	27	2.7	24	70	18
29 VA00W566	47.1	31	3.0	9	60	24
30 VA01W461	61.4	17	2.7	25	75	9
31 VA02W713	78.2	4	3.7	1	80	8
32 VA02W732	65.8	11	3.1	7	70	19

Mean:

62.6

2.8

64

Xgwm 493 and XBARC133 MARKER GENOTYPES
 (These two SSR loci flank the FHB resistance QTL on chromosome 3BS)

CULTIVAR/ DESIGNATION	<i>Xgwm</i> 493	<i>XBARC</i> 133
1 ERNIE	137	122
2 COKER 9835	137,160,188	120
3 AR 857-1-1	137,164	120
4 AR 857-1-2	137,156,188	114,120,125
5 AR 93019-2-1	137,156,188	120,125
6 AR93035-4-1	137,190	120
7 ARGE 97-1042-4-5	137,188	114,126
8 ARGE 97-1033-3-5	137,186	125
9 ARGE 97-1048-3-6	137,154,190	112,119
10 ARGE 97-1038-3-5	135,155,192	112,119
11 ARGE 97-1047-4-2	135,157,192	114,120
12 B980416	137,155,188	126
13 B980582	137,192	119
14 B011066	137,192	119
15 B011117	137	119
16 GA 931587E53	137,156,188	126
17 GA 931630E48	137,188	114
18 GA 94261E7	137,156,188	113,120
19 GA 931233A24	137,190	114,116
20 GA 941208E35	137,190	114,120
21 MV 5-46	137,194	113
22 MV 15-42	137,156,192	122
23 MV 27-78	135	NO DATA
24 NC98-26192	137,160	NO DATA
25 NC99-13296	135,192	113,119
26 NC99-13308	135,156	119,125
27 VAN98W342	137,156,190	113,119
28 VA00W562	NO DATA	120
29 VA00W566	137,190	119
30 VA01W461	137,156,188	120
31 VA02W713	137,192	119
32 VA02W732	137,194	114
Sumai 3	137,194	122
Ning 7840	137,194	122

Means Across Locations

CULTIVAR/ DESIGNATION	FHB Incidence (0-100)		FHB Severity (0-100)		FHB Index (0-100)		Scabby Seed %	Vomitoxin DON (ppm)	Heading Date (Julian)	Plant Height (in)	Greenhse Severity (0-100)					
	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK	RANK					
1 ERNIE	49.6	5	23.5	13	13.9	9	27.6	8	11.7	22	129	2	31	8	15	2
2 COKER 9835	77.8	32	57.3	32	48.9	32	58.0	32	19.6	29	133	29	29	3	46	24
3 AR 857-1-1	58.2	11	16.9	3	11.0	5	32.1	14	5.2	2	132	25	38	31	31	14
4 AR 857-1-2	48.3	3	15.7	2	10.0	3	23.4	3	5.5	6	132	26	37	30	51	27
5 AR 93019-2-1	59.6	15	25.0	16	19.4	16	46.7	30	10.9	20	134	30	40	32	53	30
6 AR93035-4-1	65.7	21	26.7	18	23.3	21	49.6	31	8.8	13	132	27	34	20	33	18
7 ARGE 97-1042-4-5	44.4	2	19.2	9	10.2	4	30.2	10	6.3	8	130	9	35	22	23	3
8 ARGE 97-1033-3-5	44.3	1	10.7	1	4.5	1	25.2	4	5.4	5	132	23	37	28	14	1
9 ARGE 97-1048-3-6	51.5	7	17.7	7	14.6	11	27.0	6	5.2	3	132	22	37	29	23	5
10 ARGE 97-1038-3-5	54.7	10	20.4	11	12.2	7	27.3	7	6.1	7	130	8	35	24	35	22
11 ARGE 97-1047-4-2	50.7	6	17.0	5	9.8	2	31.9	12	5.3	4	129	1	36	26	44	23
12 B980416	52.1	9	21.1	12	13.9	10	32.9	16	7.7	10	131	16	32	14	23	4
13 B980582	49.1	4	18.7	8	12.3	8	16.6	1	4.7	1	131	20	35	21	24	6
14 B011066	59.4	14	19.2	10	16.2	13	33.7	20	7.3	9	134	31	36	25	24	8
15 B011117	51.8	8	17.2	6	11.7	6	40.2	23	9.4	14	135	32	33	16	34	20
16 GA 931587E53	75.1	30	44.8	27	39.4	29	45.4	27	25.2	32	130	6	32	11	31	15
17 GA 931630E48	66.4	22	36.6	23	29.7	24	31.5	11	16.7	28	130	12	34	19	51	28
18 GA 94261E7	77.1	31	47.6	31	43.1	31	44.9	26	23.2	31	131	14	32	12	47	25
19 GA 931233A24	71.2	28	46.3	29	37.2	28	45.6	29	16.1	26	133	28	33	17	71	32
20 GA 941208E35	70.9	27	46.8	30	40.5	30	41.2	25	19.7	30	130	3	30	4	53	31
21 MV 5-46	68.0	24	45.3	28	35.6	27	40.9	24	15.9	25	130	5	31	7	52	29
22 MV 15-42	67.2	23	41.1	25	31.6	25	26.4	5	14.1	24	131	18	33	15	26	11
23 MV 27-78	70.7	26	36.6	24	28.0	22	45.4	28	9.9	17	131	19	30	6	48	26
24 NC98-26192	61.4	18	26.4	17	16.0	12	30.1	9	9.8	16	130	4	31	9	33	17
25 NC99-13296	72.3	29	35.2	22	29.1	23	32.1	13	16.1	27	130	7	31	10	31	16
26 NC99-13308	60.7	17	24.5	15	17.5	15	23.1	2	8.3	12	131	17	36	27	30	13
27 VAN98W342	62.4	19	29.8	20	21.0	18	33.2	17	9.7	15	131	15	29	2	29	12
28 VA00W562	70.5	25	31.1	21	21.8	19	35.4	21	10.7	19	132	24	30	5	24	7
29 VA00W566	58.8	13	29.2	19	22.8	20	38.8	22	12.3	23	130	13	28	1	34	19
30 VA01W461	58.3	12	17.0	4	16.6	14	33.3	18	7.7	11	132	21	35	23	26	10
31 VA02W713	60.1	16	23.9	14	20.7	17	32.2	15	10.2	18	130	10	33	18	25	9
32 VA02W732	63.7	20	41.5	26	31.9	26	33.4	19	11.4	21	130	11	32	13	35	21
Mean:	61		29.1		22.7		34.8		11.3		131		33		35	
L.S.D. (0.05)	10.9		10.2		11.7		15.2		10.8		2		4		20	
CV%	16.7		37.4		52.5		38.1		76.9		1		6		46	

Correlations Between Traits Over Locations.

	SEVERITY	INDEX	SCABBY SEED	VOMITOXIN DON	G'HOUSE TYPE 2	HEADING DATE	PLANT HEIGHT
INCIDENCE	0.88	0.91	0.67	0.82	0.48	ns	-0.59
SEVERITY		0.98	0.63	0.88	0.55	ns	-0.62
INDEX			0.68	0.90	0.54	ns	-0.57
SCABBY SEED				0.61	0.53	ns	-0.37
VOMITOXIN (DON)					0.44	ns	-0.54
G'HOUSE TYPE 2						ns	ns
HEADING DATE							ns