



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

State Agricultural Experiment Stations, Cooperating

2012 - 2013

**UNIFORM EASTERN SOFT RED WINTER WHEAT
NURSERY**

Report

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This is a joint progress report of cooperative investigations underway in the State Agricultural Experiment Stations and the Agricultural Research Service (ARS) of the U.S. Department of Agriculture containing preliminary data which have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. ARS expressly does not warrant the validity of the data provided in this report coming from non-ARS sources. The report is primarily a tool for the use of the cooperators and their official staff and those persons having direct and special interest in the development of agricultural research programs.

UESRWWN cooperators may use the following data from this report in registration notices, release requests, and PVP applications: their line, the check entries, the mean of the test, and (with permission from the owners) any other lines that have already been released.

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National Small Grains Germplasm Research Facility
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December 2013

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**2012-2013 UNIFORM EASTERN SOFT RED WINTER WHEAT NURSERY
LIST OF ENTRIES AND PEDIGREES**

Entry No.	Cultivar/ Designation	Pedigree	Contributor	1st Year in Nursery
1	Branson	Pio2737W/891-4584A (Pike/FL302) (formerly M00-3701)	Check	03-04
2	Bess	MO11769/Madison (formerly MO981020)	Check	02-03
3	Shirley	VA94-52-25 /Coker 9835//VA96-54-234 (formerly VA03W-409)	Check	05-06
4	MO080104	L910097/MO 92-599	Check	09-10
5	NC08-23324	B960164/NC94-7197//McCormick	Murphy	11-12
6	KY03C-1237-32	P25R18/KY92C-0010-17//KY96C-0767-1	Van Sanford	11-12
7	KY03C-1002-02	P25W33/P25W60//P25W33/KY90C-042-37-1	Van Sanford	11-12
8	VA08MAS-369	McCormick/GA881130LE5	Griffey	11-12
9	VA09W-73	SS520/VA99W-188(VA91-54-343/Roane'S)//Tribute	Griffey	11-12
10	VA10W-21	Z00-5018(U90-1A//ZX90-2C1/P2580)/VA01W-158(P2643/VA94-54-331)	Griffey	11-12
11	DANW1003	TW165-065/P25R23 [previously entered as DAS1003]	Etienne	11-12
12	OH08-180-48	Douglas/McCormick	Sneller	11-12
13	ARS07-0525	GA951395-10-7//TX99D4031	Marshall	11-12
14	NC08-140	P26R61/TC14Spear 2289B//NC00-16203	Murphy	12-13
15	NC09-20768	NC00-16203//P26R24/NC96-13965	Murphy	12-13
16	OH08-172-42	Douglas/Jekyl	Sneller	12-13
17	OH07-264-35	OH708/P92145E8-7-7-1-9	Sneller	12-13
18	IL07-4415	P96169RE2-3-6-4//IL01-34159(IL84-2191//IL87-2834//IL90-6364//IL96-24851(IL90-6364//IL90-9464/Ning7840))	Kolb	12-13
19	IL07-19334	IL01-36115//IL79-008T-B-B(DH from IL94-6727//IL96-6472)	Kolb	12-13
20	IL07-20728	McCormick/IL97-1828//IL00-8061	Kolb	12-13
21	KWS008	T127/M98-2152	Murche	12-13
22	KWS009	VA99W-206/GA90552AE33	Murche	12-13
23	KWS010	VAN97W-386/VA99W-164	Murche	12-13
24	AR00255-16-1	Roane/LA9070G45-3-3-1	Mason	12-13
25	AR01209-2-1	AGS2000/PI531193(JGI)	Mason	12-13
26	KY03C-1237-39	P25R18/KY92C-0010-17//KY96C-0767-1	Van Sanford	12-13
27	LCS10516	MO1-4377/96229-3E39	Obert	12-13
28	LCS19228	T814/L900819//VA98W-591	Obert	12-13
29	LCS19229	VA98W-593//L900819/C916	Obert	12-13
30	GA04121-11E26	GA98302/SC996284	Johnson	12-13
31	GA04434-11E44	GA961565-2E46/AGS2485//SS8641	Johnson	12-13
32	P04606RA1-1-7-1-6-3	Truman/961341A3-1-4-6	Ohm	12-13
33	P05247A1-7-3-121	99840C4-8/03726A1//99840C-8-3-6-1/3/99794RA4-14-4-5	Ohm	12-13
34	P05222A1-1-2-7	99840C4-8/5/99593RA1-7/6/97395C1-1-4/RS15//INW0304/31981281A1-4-3-7/4/981517A1-1-6-8/6//INW0316-1-4-6/7/99794RA4-14-1-5	Ohm	12-13
35	DANW1006	25R23/TW106-048	Etienne	12-13
36	DANW1008	TW165-065/25R23	Etienne	12-13
37	MD04W249-11-7	MV8-29/25R42	Costa	12-13
38	MD04W249-11-12	MV8-29/25R42	Costa	12-13
39	MD04W249-11-16	MV8-29/25R42	Costa	12-13

LOCATION NOTES

Stuttgart, Arkansas

Cooperator: Esten Mason
University of Arkansas
Planted: November 8, 2012
Harvested: June 21, 2013
Fertilizer: 150 N split application
Notes: Uniform but severe winter damage from migrating Canadian geese and some waterlogging. Very little disease. Heading and height taken on only a single rep.

Griffin, Georgia

Cooperator: Jerry Johnson, Dan Bland, Steve Sutton, John Youmans
University of Georgia
Planted: November 1, 2012
Harvested: June 12, 2013
Fertilizer: 20 N preplant; 75 N topdress

Harrisburg, Illinois

Cooperator: Jana Murche
KWS Cereals USA
Planted: October 27, 2012
Harvested: June 30, 2013

Brownstown, Illinois

Cooperator: Fred Kolb
University of Illinois
Planted: October 11, 2012
Harvested: July 8, 2013
Fertilizer: 40 N preplant; 50 N topdress
Notes: Severe leaf blight, generally poor plots, rain delayed harvest.

Urbana, Illinois

Cooperator: Fred Kolb
University of Illinois
Notes: Data not reliable due to a randomization error.

Lafayette, Indiana

Cooperator: Don Obert
Limagrain Cereal Seeds
Planted: October 29, 2012
Harvested: July 10, 2013
Notes: No inoculation for FHB. Wheat crop followed soybean, which followed corn.

Lafayette, Indiana

Cooperator: Ben Moreno
WestBred

West Lafayette, Indiana

Cooperator: Herb Ohm, Andy Linvill
Purdue University
Planted: October 9, 2012
Harvested: July 1, 2013
Fertilizer: 95 lbs of 28-0-0

West Lafayette, Indiana

Cooperator: Sue Cambron
USDA-ARS, Crop Production & Pest Control Research
Notes: Hessian fly data with multiple biotypes.

Winfield, Kansas

Cooperator: Sid Perry
WestBred
Planted: October 20, 2012
Harvested: June 25, 2013
Notes: Late freeze damage. Bacterial infection defoliated plants during grain fill.

Lexington, Kentucky

Cooperator: Dave Van Sanford
University of Kentucky
Planted: October 18, 2012
Harvested: July 3, 2013
Fertilizer: 110 N in 2 applications; P,K according to soil test
Notes: Rough year, excessive moisture during grain fill and ripening caused test weights to plummet.

Clarksville, Maryland

Cooperator: Jose Costa
University of Maryland
Planted: October 13, 2012
Harvested: July 8, 2013

Webberville, Michigan

Cooperator: Eric Olson
Michigan State University
Planted: October 1, 2012
Harvested: July 15, 2013
Fertilizer: 165 lbs of 6-24-24
Notes: We used an alpha lattice design for both yield trials and the Fhb nursery. For clarification of some Fhb values, means are adjusted along with the yield data, using a nearest neighbor analysis. In several cases, Fhb incidence values are 0

but index is greater than 0. The converse also happens with 0 index and incidence greater than 0.

St. Paul, Minnesota

Cooperator: Jim Kolmer, Yue Jin
USDA-ARS, Cereal Disease Laboratory
Notes: Leaf rust and stem rust data.

Columbia, Missouri

Cooperator: Anne McKendry, David Tague
University of Missouri
Planted: October 22, 2012
Harvested: July 11, 2013
Fertilizer: 40-80 split N
Notes: Conditions at Columbia were very cool all season, and very wet. *S. nodorum* was a real problem, during grain fill and probably reduced yields in some lines. FHB was in susceptible lines depending on heading. STB was also pretty heavy, so although the plots looked good by the end of the season yields and some cases test weights weren't as high as I had thought they might be.

Mead, Nebraska

Cooperator: Stephen Baenziger
University of Nebraska
Notes: Late season, finished under stress.

Ithaca, New York

Cooperator: Mark Sorrells
Cornell University
Planted: October 10, 2012
Harvested: July 17, 2013
Fertilizer: 200 lbs of 10-20-20 + 120 lbs am. nitrate topdress

Raleigh, North Carolina

Cooperator: David Livingston, Tan Tuong
USDA-ARS, Plant Science Research
Notes: No freeze-test data due to equipment failure.

Raleigh, North Carolina

Cooperator: Christina Cowger
USDA-ARS, Plant Science Research
Notes: Eastern Septoria Nursery data. SNB only. Raleigh (Lake Wheeler) = two reps; each plot=2 adjacent headrows (3g/headrow), randomized order within maturity class (all late entries in one block, all early entries in a separate block). Planted October 20. Inoculated with wheat straw early February, one rectangular bale per headrow tray. Rated at late-milk/early-dough. Nursery quality was high and data were good. Kinston = two reps; each plot=2 adjacent headrows (3g/headrow), randomized order within maturity class (all late entries in one block, all early entries in a separate block). Planted early November.

Inoculated with wheat straw early February, one rectangular bale per headrow tray. Nursery was affected by cold injury on earlier lines and fertility problems. Heavy leaf rust confounded SNB. Only one rep was rated. Rated at late-milk/early-dough. Data reported are means of the two Raleigh reps and one Kinston rep.

Custar, Ohio

Cooperator:

Clay Sneller
Ohio State University, OARDC

Notes:

Plots looked great and then the rains came. This delayed harvest by 1.5 to 2 weeks. Considerable shattering. CV was just 6.8, but should eye the results with caution.

Wooster, Ohio

Cooperator:

Byung-Kee Baik
USDA-ARS, Soft Wheat Quality

Notes:

Milling and baking quality data.

Enid, Oklahoma

Cooperator:

Brett Carver
Oklahoma State University

Notes:

Acid soil tolerance data. The most reliable ratings were taken on 27 April. Severe fall and winter drought conditions imposed bias, as good drought tolerance, especially at emergence, improved the early spring ratings of an otherwise acid soil-susceptible line. Spring tillering capability also imposed bias, as poor tillering capacity in January-February diminished the ratings of an otherwise acid soil-resistant line. Several late-winter freezes could have improved the perceived tolerance of a susceptible line, or diminished the tolerance of a resistant line, depending on winter dormancy release pattern. Weed competition compromised some readings, or in some cases, helped to highlight extreme susceptibility to soil acidity. Soil pH was about 4.2-4.5 as of June 2013.

Nairn, Ontario

Cooperator:

Mark Etienne
Dow AgroSciences

Planted:

October 3, 2012

Harvested:

August 14, 2013

Fertilizer:

91kg of 5.5-26-30 fall; 230kg of 44-0-0-1.7S spring

Knoxville, Tennessee

Cooperator:

Dennis West
University of Tennessee

Planted:

October 19, 2012

Harvested:

June 24, 2013

Fertilizer:

30-30-90

Notes:

Lodging caused by eyespot (strawbreaker) fungal infection. Yield data probably of little value.

Blacksburg, Virginia

Cooperator: Carl Griffey
Virginia Tech
Planted: September 24, 2012
Fertilizer: 30-60-80 fall (9/21)
Notes: Strong storms and excessive rain resulted in early lodging. Persistent rain delayed harvest for 10 days. In addition disease epidemics including FHB, stripe rust, and leaf rust severely impacted yields and test weights.

Warsaw, Virginia

Cooperator: Carl Griffey
Virginia Tech
Planted: October 17, 2012
Harvested: June 22, 2013
Fertilizer: 30-60-80-5 fall (10/11)
Notes: FHB index was estimated by accounting for incidence and severity (not rated separately) in visual ratings. FHB % white heads: white heads were predominantly scabby, a few may be due to freeze injury.

Mt. Vernon, Pullman, Walla Walla, Lind, Washington

Cooperator: Xianming Chen
USDA-ARS, Wheat Genetics, Quality, Physiology, & Disease Research
Notes: Adult stripe rust data.

Central Ferry, Pullman, Washington

Cooperator: Kim Campbell
USDA-ARS, Wheat Genetics, Quality, Physiology, & Disease Research
Notes: Stripe rust data.

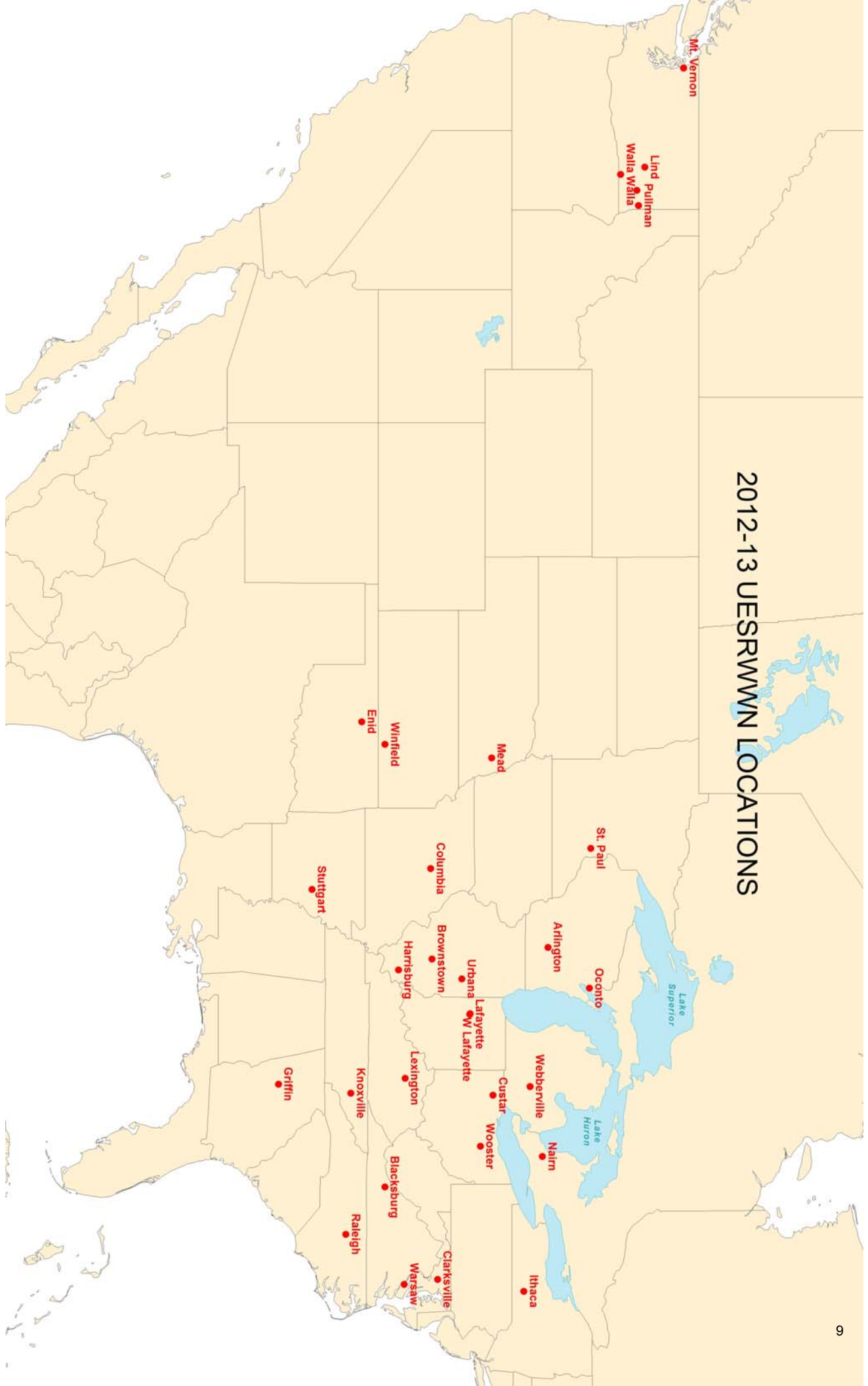
Arlington, Wisconsin

Cooperator: Shawn Conley, Adam Roth
University of Wisconsin
Planted: September 24, 2012
Harvested: July 25, 2013
Fertilizer: 55 N; previous crop soybean

Oconto, Wisconsin

Cooperator: Jana Murche
KWS Cereals USA
Planted: September 26, 2012
Harvested: August 31, 2013
Fertilizer: none; remnant manure
Notes: Unfortunately, no better precision possible for this location, mainly due to severe winterkill and some additional water damage.

2012-13 UESRWVN LOCATIONS



YIELD (bu/acre)

	Stuttgart		Griffin		Harrisburg		Brownstown		Lafayette		Lafayette		
	AR	rank	GA	rank	IL ^a	rank	IL ^a	rank	IN ^a	rank	IN ^a	rank	
	Mason		Johnson		Murche		Kolb		Obert		Moreno		
1	Branson	58.9	37	80.2	26	99.2	9	49.7	30	62.1	28	77.8	6
2	Bess	73.2	11	81.4	25	90.1	20	46.4	32	70.2	15		
3	Shirley	76.4	6	71.6	35	101.5	6	67.2	1	60.1	32	80.3	4
4	MO080104	69.4	21	106.2	5	98.1	12	56.5	18	77.3	8	64.8	26
5	NC08-23324	50.4	39	100.0	11	62.6	39	59.6	12	50.7	37	56.5	33
6	KY03C-1237-32	66.5	26	110.4	3	102.7	5	58.9	13	65.4	24		
7	KY03C-1002-02	72.8	13	105.7	7	98.4	11	51.8	26	77.9	7	80.7	3
8	VA08MAS-369	67.4	23	101.1	10	74.5	35	57.9	17	57.6	34	73.5	12
9	VA09W-73	72.4	14	117.7	1	78.2	30	55.4	21	50.0	39	49.2	36
10	VA10W-21	65.1	29	74.4	33	92.9	18	62.9	8	67.8	19	78.4	5
11	DANW1003	72.8	12	59.4	38	93.5	17	41.4	38	69.8	16	47.3	37
12	OH08-180-48	77.9	3	90.4	19	86.4	22	66.5	2	58.3	33	73.0	13
13	ARS07-0525	63.1	32	95.3	14	73.6	36	58.2	16	70.7	12	64.3	27
14	NC08-140	77.7	4	73.6	34	70.5	37	58.5	15	78.6	6	83.0	2
15	NC09-20768	56.8	38	91.8	16	81.8	27	60.6	11	63.5	27	73.9	10
16	OH08-172-42	66.8	25	53.9	39	99.8	8	61.7	9	68.9	17	65.8	23
17	OH07-264-35	66.9	24	105.8	6	106.1	2	64.1	5	67.3	21	64.0	28
18	IL07-4415	71.8	15	75.9	31	90.1	21	44.1	35	80.8	3	57.3	32
19	IL07-19334	80.5	2	83.7	24	86.1	24	55.6	20	79.8	4	70.8	15
20	IL07-20728	70.8	18	79.4	28	77.1	31	38.1	39	61.5	30	77.3	7
21	KWS008	74.2	9	75.1	32	98.5	10	52.1	25	64.6	25	63.1	29
22	KWS009	65.8	28	91.7	17	86.2	23	50.5	29	64.1	26	69.8	18
23	KWS010	59.8	36	77.7	29	103.7	4	45.0	34	68.3	18	76.3	8
24	AR00255-16-1	76.9	5	80.2	26	83.9	25	49.2	31	70.4	14	54.5	34
25	AR01209-2-1	75.8	7	84.0	23	100.4	7	42.4	36	70.5	13	65.8	24
26	KY03C-1237-39	71.2	16	68.5	37	96.3	14	58.8	14	65.5	23	88.2	1
27	LCS10516	73.4	10	98.0	13	94.7	16	42.0	37	67.6	20	62.7	31
28	LCS19228	81.3	1	98.1	12	97.2	13	51.8	26	74.1	9	72.0	14
29	LCS19229	69.8	20	90.0	20	91.8	19	53.8	23	85.1	1	76.1	9
30	GA04121-11E26	64.6	30	92.0	15	65.2	38	66.2	3	84.3	2	52.0	35
31	GA04434-11E44	70.9	17	116.0	2	76.2	32	54.5	22	50.4	38	66.1	22
32	P04606RA1-1-7-1-6-3	69.4	22	88.6	22	75.9	33	61.4	10	73.9	10	63.1	29
33	P05247A1-7-3-121	70.6	19	91.2	18	105.6	3	63.7	6	62.0	29	65.7	25
34	P05222A1-1-2-7	61.7	34	89.5	21	111.9	1	53.4	24	71.2	11	70.5	16
35	DANW1006	64.3	31	71.5	36	80.4	28	50.8	28	54.2	36	73.8	11
36	DANW1008	62.5	33	76.5	30	95.1	15	45.7	33	66.1	22	68.1	19
37	MD04W249-11-7	74.9	8	103.0	9	82.1	26	63.1	7	79.0	5	67.4	20
38	MD04W249-11-12	66.3	27	107.3	4	78.5	29	64.6	4	57.3	35	70.0	17
39	MD04W249-11-16	60.2	35	104.7	8	75.5	34	55.8	19	60.3	31	66.5	21
LOCATION MEANS		69.0		88.8		88.8		54.9		67.4		68.4	
LSD (.05)		14.8				16.06		9.5		9			
CV %		10.8				10.99		10.7		13.3			
REPS		3		1		3		3		2		1	
Harvest Plot Size (sq.ft.)		70		50		72.5		34		50			

YIELD (bu/acre)

		W Lafayette		Winfield		Lexington		Clarksville		Webberville		Columbia	
		IN	ab	KS	b	KY	a	MD	a	MI	ab	MO	a
		Ohm	rank	Perry	rank	Van	Sanford	Costa	rank	Olson	rank	McKendry	rank
1	Branson	115.7	4	57.2	28	93.1	7	67.0	18	69.1	11	56.6	14
2	Bess	99.5	14	59.6	25	93.3	6	63.5	27	61.6	27	50.3	34
3	Shirley	111.7	7	63.4	17	82.5	19	69.5	16	71.2	5	61.5	3
4	MO080104	102.8	11	62.6	19	107.7	2	69.6	14	67.9	15	52.2	28
5	NC08-23324	75.3	33	69.7	7	65.9	29	73.4	9	54.6	36	57.6	11
6	KY03C-1237-32	98.8	15	69.5	8	108.0	1	67.5	17	61.0	29	52.0	30
7	KY03C-1002-02	87.7	26	72.3	4	95.1	4	74.0	8	67.8	16	56.1	15
8	VA08MAS-369	71.8	35	68.3	10	70.1	27	81.9	2	55.0	35	60.1	4
9	VA09W-73	64.2	36	37.9	38	74.7	22	63.4	28	71.0	6	58.9	8
10	VA10W-21	111.7	6	62.9	18	85.5	10	75.6	6	66.7	18	64.4	1
11	DANW1003	74.0	34	40.9	36	73.2	23	81.1	3	75.5	1	50.6	33
12	OH08-180-48	116.3	3	66.3	13	104.7	3	70.4	12	65.5	20	62.6	2
13	ARS07-0525	40.8	39	28.4	39	69.9	28	66.6	21	60.6	30	54.3	22
14	NC08-140	106.3	10	60.1	24	57.0	32	64.4	25	65.6	19	55.8	16
15	NC09-20768	81.4	32	50.3	31	58.7	31	58.8	33	48.9	38	48.5	36
16	OH08-172-42	87.2	27	46.6	32	49.4	36	70.4	13	69.8	10	51.6	31
17	OH07-264-35	84.6	31	41.0	35	81.6	20	87.0	1	63.0	25	50.7	32
18	IL07-4415	108.1	9	59.0	27	60.4	30	63.5	26	57.2	34	44.6	39
19	IL07-19334	124.2	1	42.1	34	47.4	37	65.6	24	68.7	13	49.7	35
20	IL07-20728	122.5	2	63.9	15	39.5	38	66.8	19	65.5	20	55.8	16
21	KWS008	100.1	13	65.0	14	84.5	15	65.9	23	71.7	4	55.3	19
22	KWS009	96.1	20	63.9	16	70.9	26	66.6	20	58.5	32	53.8	26
23	KWS010	95.8	22	56.0	29	95.1	5	61.5	30	61.1	28	52.2	28
24	AR00255-16-1	92.6	24	68.8	9	27.1	39	53.8	35	57.6	33	55.2	20
25	AR01209-2-1	87.1	28	60.9	23	57.0	33	52.9	36	63.3	24	53.2	27
26	KY03C-1237-39	101.9	12	70.0	6	88.2	9	69.6	15	67.6	17	57.6	11
27	LCS10516	85.0	30	59.4	26	85.4	12	59.4	32	63.9	23	59.0	7
28	LCS19228	111.6	8	71.5	5	85.4	11	51.9	37	72.6	3	54.1	24
29	LCS19229	113.2	5	61.5	21	83.1	18	62.8	29	69.0	12	57.6	11
30	GA04121-11E26	60.5	38	39.7	37	50.4	35	75.7	5	59.5	31	59.2	6
31	GA04434-11E44	61.3	37	62.5	20	51.2	34	57.8	34	47.0	39	53.9	25
32	P04606RA1-1-7-1-6-3	89.2	25	54.7	30	89.6	8	50.4	38	49.3	37	46.8	38
33	P05247A1-7-3-121	97.5	17	46.2	33	85.0	14	60.3	31	70.7	7	59.8	5
34	P05222A1-1-2-7	85.5	29	68.1	11	72.3	24	46.6	39	61.9	26	47.4	37
35	DANW1006	94.8	23	61.2	22	79.4	21	70.4	11	70.6	8	54.9	21
36	DANW1008	95.9	21	74.9	2	83.1	17	75.0	7	75.2	2	54.2	23
37	MD04W249-11-7	96.8	18	74.0	3	85.3	13	78.8	4	68.6	14	58.1	10
38	MD04W249-11-12	96.7	19	77.4	1	83.5	16	73.2	10	65.1	22	55.4	18
39	MD04W249-11-16	98.8	16	66.4	12	71.6	25	66.2	22	69.9	9	58.2	9
LOCATION MEANS		93.5		59.6		75.5		66.6		64.3		54.9	
LSD (.05)		12.66		9.2		19.4		16.9		7.9		9	
CV %		9.7		7.5		12		12.5		7.2		10.1	
REPS		4		2		2		2		2		3	
Harvest Plot Size (sq.ft.)				50		44				60		55	

YIELD (bu/acre)

	Mead		Ithaca		Custar		Nairn		Knoxville		Blacksburg		
	NE	b	NY	ab	OH	ab	ON	ab	TN	a	VA	ab	
	Baenziger		Sorrells		Sneller		Etienne		West		Griffey		
		rank		rank		rank		rank		rank		rank	
1	Branson	57.6	38	103.0	15	72.2	13	71.8	3	92.2	1	91.0	4
2	Bess	66.4	24	84.6	34	77.4	8	56.9	27	49.0	21	78.7	15
3	Shirley	69.0	17	103.9	11	69.3	16	59.1	22	64.7	13	94.2	3
4	MO080104	70.0	13	99.2	21	66.4	17	63.3	15	70.7	10	83.2	10
5	NC08-23324	56.9	39	106.9	9	52.3	36	56.1	32	46.2	24	62.0	30
6	KY03C-1237-32	69.7	14	98.6	22	49.6	38	65.3	12	59.8	15	100.4	1
7	KY03C-1002-02	74.1	3	108.5	5	53.6	34	58.7	23	82.5	4	75.8	19
8	VA08MAS-369	66.9	22	103.8	12	70.7	15	63.5	14	58.5	16	74.8	20
9	VA09W-73	65.3	30	92.6	30	64.2	20	70.9	4	30.1	33	73.3	22
10	VA10W-21	63.7	33	107.9	6	80.1	5	56.6	30	80.6	5	97.0	2
11	DANW1003	66.1	27	105.5	10	81.4	4	73.8	1	24.3	36	42.1	39
12	OH08-180-48	71.7	6	100.2	19	64.1	21	68.1	7	63.6	14	73.2	24
13	ARS07-0525	65.3	30	83.4	35	71.9	14	53.8	33	45.4	25	66.7	29
14	NC08-140	74.7	2	71.6	37	73.0	12	59.9	19	23.1	37	66.8	28
15	NC09-20768	60.1	37	97.4	25	63.5	23	43.2	38	42.7	26	61.8	31
16	OH08-172-42	62.3	34	94.3	27	64.0	22	64.3	13	27.9	34	44.6	38
17	OH07-264-35	70.8	10	102.5	16	82.5	1	48.9	36	70.3	11	78.8	14
18	IL07-4415	71.3	9	67.0	38	78.9	7	59.5	21	47.3	23	78.3	17
19	IL07-19334	67.5	20	88.4	31	79.8	6	69.8	6	49.6	19	73.0	25
20	IL07-20728	65.9	29	30.1	39	82.1	3	67.6	8	30.2	32	57.7	35
21	KWS008	62.3	34	107.8	8	82.5	1	60.9	16	71.9	9	61.5	32
22	KWS009	68.7	18	112.3	1	75.2	11	70.3	5	73.1	6	76.3	18
23	KWS010	63.9	32	97.7	24	52.5	35	65.3	11	72.7	7	88.1	5
24	AR00255-16-1	71.7	6	86.0	32	57.7	30	57.3	25	47.9	22	54.1	37
25	AR01209-2-1	67.3	21	100.2	18	64.8	18	53.6	34	42.3	28	59.7	34
26	KY03C-1237-39	69.5	15	107.9	7	45.8	39	56.2	31	72.6	8	80.2	12
27	LCS10516	70.4	12	97.9	23	62.7	24	59.7	20	26.5	35	85.1	7
28	LCS19228	69.5	15	92.9	29	76.9	10	60.4	17	55.7	17	84.8	9
29	LCS19229	72.0	5	100.5	17	77.1	9	72.4	2	36.6	29	78.6	16
30	GA04121-11E26	75.4	1	103.2	13	61.5	25	38.3	39	11.0	39	73.8	21
31	GA04434-11E44	71.6	8	111.1	2	56.8	32	56.7	29	53.3	18	79.5	13
32	P04606RA1-1-7-1-6-3	66.9	22	76.8	36	61.1	26	49.5	35	67.9	12	69.2	27
33	P05247A1-7-3-121	67.6	19	96.3	26	57.4	31	57.2	26	88.0	3	85.5	6
34	P05222A1-1-2-7	66.0	28	85.5	33	57.8	29	45.9	37	91.7	2	70.6	26
35	DANW1006	66.3	25	110.8	3	52.3	36	56.8	28	31.1	31	55.2	36
36	DANW1008	66.3	25	103.2	14	58.1	28	66.0	9	32.6	30	84.9	8
37	MD04W249-11-7	70.6	11	109.0	4	64.3	19	65.5	10	49.4	20	60.7	33
38	MD04W249-11-12	72.8	4	99.3	20	56.1	33	58.4	24	42.7	27	82.6	11
39	MD04W249-11-16	60.5	36	93.3	28	59.6	27	60.0	18	15.7	38	73.3	22
LOCATION MEANS		67.6		95.9		66.1		60.0		52.3		73.7	
LSD (.05)		6.3		15.3		9		4.7		28		9.7	
CV %		4.61		9.5		6.8		4.61		33		7.8	
REPS		2		3		2		3		3		2	
Harvest Plot Size (sq.ft.)		55		41		50		46		43		45	

YIELD (bu/acre)

		Warsaw		Arlington		Oconto	
		VA	ab	WI	ab	WI	a
		Griffey		Conley/Roth		Murche	
			rank		rank		rank
1	Branson	109.6	3	91.3	4	90.3	6
2	Bess	88.3	33	76.9	35	62.7	29
3	Shirley	109.9	2	82.5	25	90.0	7
4	MO080104	105.4	6	80.5	28	82.1	12
5	NC08-23324	99.6	14	84.7	18	62.3	31
6	KY03C-1237-32	96.5	23	81.6	27	63.5	28
7	KY03C-1002-02	99.3	16	90.7	5	66.1	25
8	VA08MAS-369	104.7	9	76.0	36	62.6	30
9	VA09W-73	109.3	4	92.6	2	64.4	26
10	VA10W-21	103.1	10	75.8	37	79.7	15
11	DANW1003	83.7	37	95.1	1	97.3	1
12	OH08-180-48	97.2	20	89.6	9	95.3	3
13	ARS07-0525	97.2	20	84.2	21	72.2	22
14	NC08-140	101.3	12	80.2	30	50.7	36
15	NC09-20768	105.4	7	74.0	38	61.5	32
16	OH08-172-42	88.4	32	89.0	13	96.8	2
17	OH07-264-35	93.2	28	82.0	26	88.4	8
18	IL07-4415	86.8	35	90.7	7	63.9	27
19	IL07-19334	98.4	18	88.9	14	86.7	9
20	IL07-20728	95.6	24	78.8	32	82.2	11
21	KWS008	91.9	29	89.4	10	78.5	18
22	KWS009	100.2	13	77.1	34	81.8	13
23	KWS010	90.4	30	79.0	31	83.3	10
24	AR00255-16-1	87.9	34	83.1	24	50.6	37
25	AR01209-2-1	97.0	22	78.6	33	72.4	21
26	KY03C-1237-39	94.1	27	83.5	23	77.0	19
27	LCS10516	95.3	26	89.2	12	61.1	33
28	LCS19228	98.6	17	91.3	3	80.2	14
29	LCS19229	108.0	5	86.7	16	92.2	5
30	GA04121-11E26	88.8	31	84.4	19	47.6	39
31	GA04434-11E44	117.2	1	73.9	39	53.8	34
32	P04606RA1-1-7-1-6-3	79.7	38	85.9	17	52.0	35
33	P05247A1-7-3-121	99.6	14	87.6	15	78.6	17
34	P05222A1-1-2-7	84.8	36	83.7	22	69.3	23
35	DANW1006	72.5	39	89.8	8	78.9	16
36	DANW1008	97.3	19	90.7	6	92.5	4
37	MD04W249-11-7	102.6	11	80.2	29	50.2	38
38	MD04W249-11-12	105.1	8	89.4	11	67.8	24
39	MD04W249-11-16	95.6	25	84.3	20	74.5	20
LOCATION MEANS		96.9		84.4		73.4	
LSD (.05)		12.91		10.4		14.83	
CV %		7.9		7.8		12.28	
REPS		2		3		3	
Harvest Plot Size (sq.ft.)		45		70		57.5	

YIELD (bu/acre)

	ENTRY MEANS ALL LOCATIONS				ENTRY MEANS IN-REGION				ENTRY MEANS CV <10%			
			%		a		%		b		%	
	rank	mean yield			rank	mean yield			rank	mean yield		
1 Branson	79.3	1	109.4	83.0	1	114.1	90.4	1	114.0			
2 Bess	71.5	21	98.6	71.8	20	98.7	78.0	26	98.3			
3 Shirley	79.0	3	109.0	81.1	3	111.5	87.7	3	110.5			
4 MO080104	78.8	4	108.8	79.3	5	108.9	83.6	9	105.3			
5 NC08-23324	66.8	35	92.2	66.2	35	91.0	73.9	33	93.2			
6 KY03C-1237-32	77.3	9	106.6	76.8	12	105.6	81.5	13	102.7			
7 KY03C-1002-02	78.6	6	108.4	77.9	7	107.1	80.3	16	101.1			
8 VA08MAS-369	72.4	20	99.9	71.6	21	98.4	77.5	27	97.7			
9 VA09W-73	69.3	26	95.6	68.4	30	93.9	79.8	18	100.5			
10 VA10W-21	78.7	5	108.6	81.6	2	112.1	87.4	4	110.1			
11 DANW1003	69.0	29	95.2	71.2	23	97.8	78.9	22	99.4			
12 OH08-180-48	79.1	2	109.1	79.7	4	109.5	84.3	7	106.2			
13 ARS07-0525	66.0	36	91.0	66.7	33	91.6	69.8	39	88.0			
14 NC08-140	69.2	27	95.4	68.6	29	94.3	78.1	25	98.4			
15 NC09-20768	65.9	37	91.0	66.2	36	91.0	71.9	36	90.6			
16 OH08-172-42	67.8	32	93.5	70.2	25	96.5	75.2	31	94.8			
17 OH07-264-35	76.2	10	105.1	77.4	9	106.3	79.4	20	100.1			
18 IL07-4415	69.4	25	95.7	69.3	27	95.3	78.3	24	98.7			
19 IL07-19334	74.1	18	102.2	75.4	17	103.6	86.4	5	108.8			
20 IL07-20728	67.1	34	92.5	66.4	34	91.2	75.0	32	94.5			
21 KWS008	75.1	14	103.6	76.5	13	105.1	83.2	11	104.9			
22 KWS009	74.9	15	103.3	75.4	16	103.7	83.2	10	104.9			
23 KWS010	73.6	19	101.5	75.8	14	104.1	78.7	23	99.2			
24 AR00255-16-1	65.1	38	89.8	62.9	39	86.4	72.0	34	90.7			
25 AR01209-2-1	69.0	28	95.2	68.3	31	93.8	75.5	28	95.2			
26 KY03C-1237-39	75.7	12	104.4	77.1	11	105.9	79.6	19	100.3			
27 LCS10516	71.3	22	98.4	70.4	24	96.8	79.8	17	100.6			
28 LCS19228	77.7	8	107.2	77.1	10	106.0	86.1	6	108.5			
29 LCS19229	78.0	7	107.6	79.1	6	108.7	88.2	2	111.1			
30 GA04121-11E26	64.4	39	88.9	63.6	38	87.4	71.2	37	89.8			
31 GA04434-11E44	68.7	30	94.7	65.9	37	90.6	75.4	29	95.1			
32 P04606RA1-1-7-1-6-3	67.7	33	93.4	67.2	32	92.3	70.1	38	88.3			
33 P05247A1-7-3-121	76.0	11	104.8	77.7	8	106.7	81.5	14	102.6			
34 P05222A1-1-2-7	71.2	23	98.2	71.2	22	97.8	71.9	35	90.7			
35 DANW1006	68.6	31	94.6	69.2	28	95.1	75.3	30	94.9			
36 DANW1008	74.5	17	102.7	75.5	15	103.7	83.9	8	105.7			
37 MD04W249-11-7	75.4	13	104.0	74.2	18	101.9	81.0	15	102.0			
38 MD04W249-11-12	74.7	16	103.1	73.3	19	100.7	81.6	12	102.8			
39 MD04W249-11-16	70.0	24	96.6	69.4	26	95.3	79.3	21	100.0			
LOCATION MEANS	72.5			72.8			79.4					
LSD (.05)												
CV %												
REPS												
Harvest Plot Size (sq.ft.)												

TEST WEIGHT (pounds/bushel)

	Stuttgart AR Mason	Griffin GA Johnson	Harrisburg IL Murche	Lafayette IN Moreno	W Lafayette IN Ohm	
1	Branson	59.7	56.3	58.7	58.3	57.8
2	Bess	60.3	56.9	58.6		58.9
3	Shirley	59.2	51.9	57.1	55.2	56.8
4	MO080104	61.2	58.7	61.9	58.4	60.9
5	NC08-23324	56.6	57.8	58.0	58.0	59.0
6	KY03C-1237-32	60.9	58.0	58.9		59.7
7	KY03C-1002-02	60.4	56.7	59.9	57.7	59.0
8	VA08MAS-369	60.5	58.6	61.5	57.4	58.8
9	VA09W-73	59.5	58.0	59.4	57.4	57.6
10	VA10W-21	58.5	53.8	58.9	58.5	59.6
11	DANW1003	59.8	57.0	59.5	51.3	57.7
12	OH08-180-48	58.6	56.0	58.4	57.7	58.6
13	ARS07-0525	60.4	56.9	57.3	58.4	57.5
14	NC08-140	59.1	55.0	58.2	56.1	58.6
15	NC09-20768	60.1	58.0	58.8	58.4	59.2
16	OH08-172-42	60.4	53.9	58.3	56.5	58.6
17	OH07-264-35	58.9	55.4	58.0	56.4	56.9
18	IL07-4415	59.3	56.0	57.5	57.8	58.7
19	IL07-19334	60.5	58.6	62.8	58.5	60.4
20	IL07-20728	61.3	59.7	60.6	62.2	62.3
21	KWS008	59.7	55.1	57.7	54.5	57.3
22	KWS009	61.5	58.7	61.6	60.1	61.0
23	KWS010	59.3	58.0	59.1	59.3	59.3
24	AR00255-16-1	59.8	55.8	56.9	56.8	57.6
25	AR01209-2-1	60.2	57.5	58.8	56.1	58.1
26	KY03C-1237-39	60.3	56.9	57.3	57.2	58.7
27	LCS10516	59.7	57.0	58.9	56.4	58.4
28	LCS19228	58.8	56.5	58.6	57.6	57.5
29	LCS19229	60.7	57.1	59.2	60.2	59.6
30	GA04121-11E26	61.7	58.7	59.6	57.5	58.2
31	GA04434-11E44	60.7	58.2	58.2	56.3	56.0
32	P04606RA1-1-7-1-6-3	59.3	57.5	58.2	58.4	59.8
33	P05247A1-7-3-121	60.7	57.3	61.4	58.0	59.3
34	P05222A1-1-2-7	57.0	54.4	59.8	55.9	57.1
35	DANW1006	60.1	57.0	57.6	56.7	58.2
36	DANW1008	59.3	57.5	58.3	55.6	58.5
37	MD04W249-11-7	61.5	58.1	59.8	58.7	59.4
38	MD04W249-11-12	61.5	58.6	59.8	57.9	59.0
39	MD04W249-11-16	59.5	56.7	57.1	57.3	57.6
LOCATION MEANS		59.9	56.9	59.0	57.4	58.6

TEST WEIGHT (pounds/bushel)

	Winfield KS Perry	Lexington KY Van Sanford	Clarksville MD Costa	Webberville MI Olson	Columbia MO McKendry	
1	Branson	57.6	52.6	51.8	56.1	57.6
2	Bess	59.1	55.0	53.8	57.7	58.5
3	Shirley	56.6	51.3	51.9	55.9	56.9
4	MO080104	61.1	60.0	54.6	57.7	59.7
5	NC08-23324	61.0	46.8	53.3	57.2	60.1
6	KY03C-1237-32	58.7	56.5	53.9	55.9	58.6
7	KY03C-1002-02	59.3	53.9	53.1	54.8	58.4
8	VA08MAS-369	61.6	52.3	53.9	56.2	59.8
9	VA09W-73	57.4	51.2	51.1	57.0	59.0
10	VA10W-21	59.4	54.2	52.2	57.6	59.7
11	DANW1003	55.6	53.0	52.4	56.7	57.6
12	OH08-180-48	57.3	52.1	52.4	58.4	57.9
13	ARS07-0525	55.0	56.2	51.8	58.0	59.3
14	NC08-140	57.2	48.6	52.7	56.4	60.1
15	NC09-20768	58.3	52.5	52.8	55.3	59.5
16	OH08-172-42	58.1	51.7	51.8	54.7	57.8
17	OH07-264-35	55.0	54.2	52.0	57.1	56.1
18	IL07-4415	55.8	51.2	51.3	53.4	57.9
19	IL07-19334	56.1	55.7	54.1	58.1	59.4
20	IL07-20728	60.8	51.7	54.9	58.8	61.5
21	KWS008	58.8	53.9	51.8	56.0	57.5
22	KWS009	61.3	53.5	54.0	56.6	60.1
23	KWS010	59.2	53.7	53.2	57.1	59.6
24	AR00255-16-1	57.2	45.8	50.5	55.9	57.5
25	AR01209-2-1	57.7	52.2	52.0	56.8	58.2
26	KY03C-1237-39	58.7	52.8	53.6	53.8	58.6
27	LCS10516	57.9	53.6	53.5	56.6	59.0
28	LCS19228	58.6	53.5	50.3	55.1	57.8
29	LCS19229	58.2	55.2	52.7	56.4	58.8
30	GA04121-11E26	55.8	53.5	54.7	59.0	60.5
31	GA04434-11E44	59.0	46.8	54.3	59.3	58.2
32	P04606RA1-1-7-1-6-3	59.3	57.0	52.6	57.4	59.1
33	P05247A1-7-3-121	57.2	55.7	52.8	58.3	59.7
34	P05222A1-1-2-7	56.8	52.6	51.9	55.0	56.3
35	DANW1006	58.8	52.7	51.3	55.0	57.4
36	DANW1008	59.4	53.1	51.8	56.7	58.5
37	MD04W249-11-7	61.5	54.6	54.0	59.1	59.0
38	MD04W249-11-12	61.1	55.4	51.9	57.0	58.6
39	MD04W249-11-16	58.5	51.5	52.4	56.9	57.8
LOCATION MEANS		58.4	53.0	52.7	56.7	58.7

TEST WEIGHT (pounds/bushel)

	Mead NE	Ithaca NY	Custar OH	Nairon ON	Blacksburg VA	
	Baenziger	Sorrells	Sneller	Etienne	Griffey	
1	Branson	59.0	58.6	52.2	61.4	51.6
2	Bess	59.8	59.7	53.8	63.5	54.3
3	Shirley	55.9	57.9	51.7	59.9	51.5
4	MO080104	62.0	61.0	50.2	63.3	57.4
5	NC08-23324	59.6	61.5	52.3	62.9	49.7
6	KY03C-1237-32	60.2	60.7	52.0	62.1	56.0
7	KY03C-1002-02	59.2	59.4	52.0	61.9	53.2
8	VA08MAS-369	60.2	60.5	54.7	63.5	52.9
9	VA09W-73	57.7	60.0	52.2	63.5	52.5
10	VA10W-21	57.5	61.2	54.4	64.5	54.0
11	DANW1003	58.5	59.3	55.0	61.4	49.5
12	OH08-180-48	59.1	60.3	55.7	61.4	50.0
13	ARS07-0525	58.4	60.2	54.3	61.8	50.6
14	NC08-140	59.0	58.4	25.2	61.8	52.5
15	NC09-20768	58.9	60.6	54.1	58.6	50.9
16	OH08-172-42	58.9	59.7	51.4	61.7	48.0
17	OH07-264-35	58.4	57.9	54.5	59.3	51.5
18	IL07-4415	58.7	58.1	55.7	62.3	52.2
19	IL07-19334	59.1	58.7	54.0	63.7	52.2
20	IL07-20728	62.6	62.5	58.0	65.9	55.0
21	KWS008	57.9	58.9	55.2	61.9	48.8
22	KWS009	61.3	61.5	52.6	63.6	55.7
23	KWS010	59.4	60.4	53.8	63.1	54.6
24	AR00255-16-1	57.2	56.2	54.0	60.5	45.7
25	AR01209-2-1	57.9	59.3	54.6	61.3	52.4
26	KY03C-1237-39	59.0	59.7	53.0	62.0	54.5
27	LCS10516	59.3	59.8	55.9	62.3	54.1
28	LCS19228	58.4	59.3	50.6	62.9	51.0
29	LCS19229	58.7	59.3	55.4	63.5	53.0
30	GA04121-11E26	60.7	61.3	54.3	60.8	53.1
31	GA04434-11E44	60.5	61.0	55.5	62.3	52.8
32	P04606RA1-1-7-1-6-3	59.8	60.4	55.2	62.8	54.1
33	P05247A1-7-3-121	59.6	60.1	53.4	62.3	53.1
34	P05222A1-1-2-7	57.8	57.9	53.7	60.5	52.6
35	DANW1006	58.6	58.7	51.7	59.2	50.8
36	DANW1008	57.1	59.3	54.3	61.1	53.3
37	MD04W249-11-7	61.3	61.0	52.7	62.5	49.1
38	MD04W249-11-12	60.7	60.5	55.9	63.0	54.2
39	MD04W249-11-16	58.7	59.2	51.6	61.8	50.5
LOCATION MEANS	59.1	59.7	53.0	62.1	52.3	

TEST WEIGHT (pounds/bushel)

		Warsaw VA Griffey	Arlington WI Conley/Roth	Oconto WI Murche	ENTRY MEANS ALL LOCATIONS	rank
1	Branson	59.7	59.1	51.9	56.7	27
2	Bess	59.2	59.1	51.7	57.6	14
3	Shirley	58.3	57.8	51.6	55.4	37
4	MO080104	61.8	60.7	54.7	59.2	2
5	NC08-23324	58.9	60.6	49.1	56.8	26
6	KY03C-1237-32	58.5	60.0	54.2	57.9	7
7	KY03C-1002-02	59.2	59.9	54.3	57.4	17
8	VA08MAS-369	60.6	59.0	50.3	57.9	8
9	VA09W-73	60.4	60.1	51.5	57.0	23
10	VA10W-21	58.2	61.1	53.8	57.6	15
11	DANW1003	58.7	60.1	53.2	56.5	29
12	OH08-180-48	58.8	59.8	53.3	57.0	21
13	ARS07-0525	59.7	60.7	54.2	57.3	18
14	NC08-140	58.9	59.1	47.9	54.7	39
15	NC09-20768	60.2	58.6	52.5	57.1	20
16	OH08-172-42	59.6	59.1	53.2	56.3	34
17	OH07-264-35	58.3	57.2	53.8	56.2	35
18	IL07-4415	58.5	58.8	52.8	56.4	30
19	IL07-19334	60.6	60.5	50.6	58.0	6
20	IL07-20728	62.7	60.5	56.4	59.9	1
21	KWS008	58.0	58.7	52.0	56.3	33
22	KWS009	61.3	61.9	52.9	58.8	3
23	KWS010	60.0	59.7	53.3	57.9	9
24	AR00255-16-1	56.8	58.5	49.2	55.1	38
25	AR01209-2-1	59.2	59.1	53.1	56.9	24
26	KY03C-1237-39	59.3	59.4	53.9	57.1	19
27	LCS10516	60.8	59.8	49.8	57.4	16
28	LCS19228	59.0	59.6	53.2	56.6	28
29	LCS19229	60.3	60.1	53.3	57.9	11
30	GA04121-11E26	59.8	61.4		58.3	4
31	GA04434-11E44	60.1	59.1	45.9	56.9	25
32	P04606RA1-1-7-1-6-3	59.6	60.5	50.9	57.9	10
33	P05247A1-7-3-121	59.5	59.8	52.9	57.8	12
34	P05222A1-1-2-7	57.3	58.6	52.7	56.0	36
35	DANW1006	58.2	59.7	54.0	56.4	31
36	DANW1008	59.0	60.2	52.8	57.0	22
37	MD04W249-11-7	59.2	61.0	48.2	57.8	13
38	MD04W249-11-12	59.7	61.1	50.1	58.1	5
39	MD04W249-11-16	58.1	59.0	51.1	56.4	32
LOCATION MEANS		59.4	59.7	52.1	57.2	

HEADING DATE (Julian days)

	Stuttgart AR Mason	Griffin GA Johnson	Harrisburg IL Murche	Lafayette IN Obert	Lafayette IN Moreno	
1	Branson	118	110	126.9	143	136
2	Bess	116	116	124.7	144	138
3	Shirley	119	113	129.6	144	138
4	MO080104	113	103	129.0	144	136
5	NC08-23324	119	105	128.8	146	138
6	KY03C-1237-32	115	105	124.6	143	135
7	KY03C-1002-02	115	110	125.3	144	136
8	VA08MAS-369	117	102	126.9	144	138
9	VA09W-73	117	107	126.9	145	
10	VA10W-21	117	109	126.4	144	136
11	DANW1003	122	121	133.4	146	
12	OH08-180-48	117	116	130.6	144	139
13	ARS07-0525	117	116	127.4	144	139
14	NC08-140	115	109	126.3	144	136
15	NC09-20768	117	110	127.4	145	139
16	OH08-172-42	121	116	130.5	144	136
17	OH07-264-35	118	114	130.7	143	137
18	IL07-4415	117	116	129.5	146	135
19	IL07-19334	120	121	131.7	142	139
20	IL07-20728	119	118	130.5	142	136
21	KWS008	116	107	127.4	144	138
22	KWS009	117	112	126.1	144	137
23	KWS010	120	117	131.4	144	139
24	AR00255-16-1	118	119	127.0	144	137
25	AR01209-2-1	117	111	126.6	144	137
26	KY03C-1237-39	116	109	125.1	144	135
27	LCS10516	115	107	127.8	144	139
28	LCS19228	118	116	127.5	144	136
29	LCS19229	120	112	128.3	145	137
30	GA04121-11E26	115	101	125.2	144	137
31	GA04434-11E44	118	103	127.1	146	139
32	P04606RA1-1-7-1-6-3	120	115	129.7	142	137
33	P05247A1-7-3-121	120	115	130.5	144	136
34	P05222A1-1-2-7	113	109	126.8	144	135
35	DANW1006	127	120	133.6	146	139
36	DANW1008	119	117	132.3	145	138
37	MD04W249-11-7	116	109	125.4	146	137
38	MD04W249-11-12	117	109	125.0	145	136
39	MD04W249-11-16	116	110	125.6	144	136
LOCATION MEANS	117.6	111.7	128.1	144.2	137.1	

HEADING DATE (Julian days)

	W Lafayette	Lexington	Clarksville	Webberville	Columbia	
	IN	KY	MD	MI	MO	
	Ohm	Van Sanford	Costa	Olson	McKendry	
1	Branson	138.0	129.9	131.5	152.5	139.3
2	Bess	139.0	129.5	133.5	152.8	139.7
3	Shirley	139.5	135.5	136.5	154.3	141.0
4	MO080104	139.0	130.2	134.0	152.6	139.3
5	NC08-23324	140.0	131.5	132.0	153.6	141.0
6	KY03C-1237-32	137.5	128.5	131.5	152.2	139.3
7	KY03C-1002-02	138.0	130.1	133.0	153.2	139.7
8	VA08MAS-369	139.5	134.6	134.5	153.2	140.7
9	VA09W-73	141.0	132.8	137.5	155.1	141.7
10	VA10W-21	138.0	131.1	134.0	153.1	141.0
11	DANW1003	140.0	136.4	137.5	154.8	141.7
12	OH08-180-48	139.5	134.8	138.0	153.5	141.3
13	ARS07-0525	140.5	133.6	134.5	154.3	140.3
14	NC08-140	139.5	130.2	134.5	154.5	139.0
15	NC09-20768	140.0	133.9	135.0	154.4	140.0
16	OH08-172-42	139.0	132.8	136.0	153.5	141.3
17	OH07-264-35	138.5	131.3	136.5	153.6	141.0
18	IL07-4415	137.5	130.2	130.5	151.3	139.0
19	IL07-19334	139.5	134.6	138.0	154.3	140.7
20	IL07-20728	138.5	133.7	135.0	151.4	140.0
21	KWS008	140.0	133.0	136.5	154.3	141.7
22	KWS009	138.5	131.9	135.5	155.0	140.3
23	KWS010	139.5	136.5	139.0	155.8	141.7
24	AR00255-16-1	138.0	131.9	133.0	153.3	140.0
25	AR01209-2-1	139.0	131.1	138.5	154.0	140.0
26	KY03C-1237-39	138.5	130.4	132.5	152.9	140.0
27	LCS10516	139.0	130.4	134.5	153.2	140.3
28	LCS19228	137.5	130.9	132.0	152.4	140.0
29	LCS19229	139.0	132.1	136.0	153.7	140.7
30	GA04121-11E26	138.5	131.5	131.0	154.3	139.7
31	GA04434-11E44	141.0	133.5	137.5	158.0	141.0
32	P04606RA1-1-7-1-6-3	139.0	133.3	134.5	153.3	140.7
33	P05247A1-7-3-121	139.0	134.6	134.0	153.0	140.7
34	P05222A1-1-2-7	138.0	131.5	129.0	152.5	139.3
35	DANW1006	141.0	135.8	138.5	157.1	142.3
36	DANW1008	140.0	133.5	138.0	155.5	141.3
37	MD04W249-11-7	139.5	130.7	132.5	153.0	141.0
38	MD04W249-11-12	139.5	128.9	131.5	153.1	140.0
39	MD04W249-11-16	139.0	129.6	131.0	152.1	139.0
LOCATION MEANS	139.1	132.2	134.6	153.7	140.4	

HEADING DATE (Julian days)

		Mead NE	Ithaca NY	Custar OH	Nairn ON	Blacksburg VA
		Baenziger	Sorrells	Sneller	Etienne	Griffey
1	Branson	150.5	150.3	143	149.3	129.0
2	Bess	150.5	150.7	143	149.0	130.5
3	Shirley	151.5	152.3	144	153.0	131.0
4	MO080104	151.0	150.0	143	150.0	130.5
5	NC08-23324	151.5	152.0	144	151.0	131.5
6	KY03C-1237-32	151.0	149.3	142	149.3	130.0
7	KY03C-1002-02	151.0	151.3	142	151.3	130.5
8	VA08MAS-369	150.5	151.0	143	151.0	132.0
9	VA09W-73	152.0	153.0	146	152.0	134.0
10	VA10W-21	150.5	151.7	144	151.7	131.0
11	DANW1003	151.0	151.7	142	151.7	138.0
12	OH08-180-48	151.0	152.0	141	152.7	135.5
13	ARS07-0525	151.0	151.0	144	151.0	131.0
14	NC08-140	151.5	150.7	142	151.0	132.0
15	NC09-20768	152.0	152.0	142	152.3	130.0
16	OH08-172-42	151.0	150.3	143	150.7	131.5
17	OH07-264-35	151.0	150.7	144	151.3	132.0
18	IL07-4415	148.0	148.7	143	147.3	128.5
19	IL07-19334	151.5	151.3	143	152.0	132.5
20	IL07-20728	150.0	149.0	141	148.7	133.5
21	KWS008	151.0	151.7	142	151.0	132.0
22	KWS009	151.5	150.7	141	150.7	129.5
23	KWS010	152.0	153.0	143	153.3	131.5
24	AR00255-16-1	149.0	150.3	142	149.3	131.0
25	AR01209-2-1	151.5	150.7	145	151.3	132.0
26	KY03C-1237-39	151.0	151.3	145	151.0	129.5
27	LCS10516	151.5	151.0	143	150.0	131.0
28	LCS19228	150.5	150.0	143	149.3	130.5
29	LCS19229	151.0	151.7	144	152.0	132.5
30	GA04121-11E26	149.5	150.7	142	151.0	131.0
31	GA04434-11E44	152.0	152.0	145	152.0	131.0
32	P04606RA1-1-7-1-6-3	151.0	150.0	144	149.0	130.0
33	P05247A1-7-3-121	150.5	151.0	142	151.3	131.5
34	P05222A1-1-2-7	150.5	149.0	142	149.7	130.0
35	DANW1006	152.0	153.0	145	153.0	136.0
36	DANW1008	152.0	152.3	143	152.0	131.5
37	MD04W249-11-7	151.5	151.7	143	151.3	137.0
38	MD04W249-11-12	151.0	150.0	142	150.0	130.0
39	MD04W249-11-16	151.0	150.0	141	149.0	130.5
LOCATION MEANS		151.0	151.0	143.0	150.8	131.6

HEADING DATE (Julian days)

		Warsaw VA Griffey	ENTRY MEANS ALL LOCATIONS	rank
1	Branson	117.0	135.3	6
2	Bess	117.5	135.9	12
3	Shirley	119.5	137.6	33
4	MO080104	117.5	135.1	5
5	NC08-23324	118.0	136.4	19
6	KY03C-1237-32	116.0	134.3	1
7	KY03C-1002-02	116.0	135.4	9
8	VA08MAS-369	118.0	136.0	15
9	VA09W-73	118.5	137.3	31
10	VA10W-21	117.0	136.0	14
11	DANW1003	124.5	139.4	38
12	OH08-180-48	122.5	138.0	34
13	ARS07-0525	119.0	137.1	28
14	NC08-140	117.0	135.8	11
15	NC09-20768	119.0	136.8	25
16	OH08-172-42	120.5	137.3	32
17	OH07-264-35	119.0	137.0	26
18	IL07-4415	117.5	135.3	7
19	IL07-19334	124.0	138.4	36
20	IL07-20728	120.5	136.7	23
21	KWS008	119.5	136.6	20
22	KWS009	117.0	136.1	17
23	KWS010	123.5	138.8	37
24	AR00255-16-1	118.0	136.3	18
25	AR01209-2-1	118.0	136.7	22
26	KY03C-1237-39	116.5	135.5	10
27	LCS10516	118.0	135.9	13
28	LCS19228	119.5	136.1	16
29	LCS19229	119.5	137.2	29
30	GA04121-11E26	117.0	134.9	3
31	GA04434-11E44	118.5	137.2	30
32	P04606RA1-1-7-1-6-3	120.0	136.8	24
33	P05247A1-7-3-121	120.0	137.1	27
34	P05222A1-1-2-7	117.5	134.8	2
35	DANW1006	126.0	140.3	39
36	DANW1008	118.0	138.0	35
37	MD04W249-11-7	121.5	136.6	21
38	MD04W249-11-12	117.5	135.3	8
39	MD04W249-11-16	118.0	135.1	4
LOCATION MEANS		119.0	136.6	

HEIGHT (inches)

	Stuttgart AR Mason	Griffin GA Johnson	Harrisburg IL Murche	Brownstown IL Kolb	Lafayette IN Obert	
1	Branson	33	37	37.3	31	31.9
2	Bess	34	37	42.0	33	34.6
3	Shirley	32	32	35.4	32	29.9
4	MO080104	32	40	42.7	38	38.6
5	NC08-23324	33	32	36.7	33	32.7
6	KY03C-1237-32	30	32	36.7	29	29.1
7	KY03C-1002-02	30	33	38.0	29	32.7
8	VA08MAS-369	32	31	36.0	31	31.5
9	VA09W-73	36	36	37.3	32	30.7
10	VA10W-21	33	35	36.7	30	33.5
11	DANW1003	38	44	45.3	37	38.6
12	OH08-180-48	34	37	39.3	34	32.3
13	ARS07-0525	31	35	37.3	30	33.1
14	NC08-140	32	37	39.3	32	35.4
15	NC09-20768	32	34	35.3	34	32.7
16	OH08-172-42	35	40	41.3	34	34.6
17	OH07-264-35	39	41	44.0	35	38.2
18	IL07-4415	36	37	39.3	29	35.8
19	IL07-19334	36	36	40.0	34	35.8
20	IL07-20728	35	38	38.7	34	35.0
21	KWS008	37	36	42.7	35	37.4
22	KWS009	33	35	37.3	32	32.3
23	KWS010	34	34	36.6	28	30.3
24	AR00255-16-1	30	34	36.0	32	29.9
25	AR01209-2-1	35	38	42.0	33	35.4
26	KY03C-1237-39	30	35	37.4	32	31.1
27	LCS10516	36	38	41.4	34	35.8
28	LCS19228	37	39	41.4	33	36.6
29	LCS19229	30	34	37.4	32	35.0
30	GA04121-11E26	32	32	34.7	33	34.6
31	GA04434-11E44	31	34	35.3	30	30.3
32	P04606RA1-1-7-1-6-3	39	38	42.7	33	37.0
33	P05247A1-7-3-121	33	35	38.0	30	29.9
34	P05222A1-1-2-7	28	32	32.0	27	28.3
35	DANW1006	37	34	44.7	37	37.4
36	DANW1008	36	36	41.3	32	35.4
37	MD04W249-11-7	36	38	40.0	35	35.4
38	MD04W249-11-12	33	38	36.7	33	31.9
39	MD04W249-11-16	36	37	41.3	37	37.4
LOCATION MEANS	33.7	35.9	38.9	32.5	33.8	

HEIGHT (inches)

	Lafayette IN Moreno	W Lafayette IN Ohm	Lexington KY Van Sanford	Clarksville MD Costa	Webberville MI Olson	
1	Branson	37	35.0	36.6	38.1	31.5
2	Bess	36	36.0	37.1	35.7	31.1
3	Shirley	34	33.6	33.9	32.1	28.6
4	MO080104	39	37.1	39.7	37.9	30.9
5	NC08-23324	34	34.1	34.7	34.5	27.8
6	KY03C-1237-32	36	32.0	36.5	30.8	24.7
7	KY03C-1002-02	38	32.4	34.9	35.2	27.3
8	VA08MAS-369	35	30.4	36.9	35.4	26.5
9	VA09W-73	30	32.3	35.8	36.5	32.5
10	VA10W-21	36	35.0	36.2	35.0	27.0
11	DANW1003	33	37.3	42.8	44.6	35.8
12	OH08-180-48	36	34.8	37.7	41.0	27.3
13	ARS07-0525	32	27.1	36.8	35.5	27.0
14	NC08-140	36	35.9	40.0	36.5	30.0
15	NC09-20768	34	33.0	34.9	32.6	28.6
16	OH08-172-42	38	34.0	39.9	36.9	31.8
17	OH07-264-35	41	36.3	42.1	41.7	32.3
18	IL07-4415	37	36.0	38.5	35.5	29.5
19	IL07-19334	39	37.9	38.1	37.8	30.4
20	IL07-20728	38	36.3	38.8	40.5	27.5
21	KWS008	41	37.9	40.9	39.4	31.0
22	KWS009	35	33.5	37.4	35.1	30.7
23	KWS010	34	32.8	35.6	33.6	28.0
24	AR00255-16-1	32	31.9	35.4	31.7	23.1
25	AR01209-2-1	37	37.3	38.2	42.8	31.1
26	KY03C-1237-39	38	34.6	34.7	35.3	30.5
27	LCS10516	39	35.9	39.7	36.7	30.8
28	LCS19228	40	38.8	40.5	37.3	32.8
29	LCS19229	37	36.1	36.7	40.7	30.1
30	GA04121-11E26	31	29.9	37.4	41.7	27.7
31	GA04434-11E44	32	30.0	35.3	37.9	25.2
32	P04606RA1-1-7-1-6-3	39	34.8	40.7	38.2	28.8
33	P05247A1-7-3-121	35	32.0	35.9	32.5	27.7
34	P05222A1-1-2-7	29	27.8	31.5	29.1	22.5
35	DANW1006	41	40.9	43.8	39.6	36.6
36	DANW1008	38	36.0	39.7	38.7	32.0
37	MD04W249-11-7	36	34.9	40.3	37.1	30.0
38	MD04W249-11-12	36	34.6	35.3	35.4	30.5
39	MD04W249-11-16	39	36.8	39.7	43.0	32.4
LOCATION MEANS	36.1	34.4	37.7	36.9	29.5	

HEIGHT (inches)

	Columbia MO McKendry	Mead NE Baenziger	Ithaca NY Sorrells	Nairn ON Etienne	Blacksburg VA Griffey	
1	Branson	31	34.0	28.3	29.5	35.0
2	Bess	33	34.5	31.2	28.7	38.5
3	Shirley	30	33.0	27.6	29.1	35.5
4	MO080104	35	36.5	32.0	29.5	37.8
5	NC08-23324	33	32.5	29.1	29.1	31.5
6	KY03C-1237-32	31	30.5	27.3	26.8	34.3
7	KY03C-1002-02	30	31.5	27.6	27.6	33.3
8	VA08MAS-369	31	31.5	28.1	27.2	34.0
9	VA09W-73	33	34.0	29.4	30.7	33.8
10	VA10W-21	31	32.0	27.4	26.4	35.3
11	DANW1003	35	43.0	34.4	34.6	38.5
12	OH08-180-48	32	35.0	28.6	31.1	34.8
13	ARS07-0525	30	32.0	28.6	26.8	34.0
14	NC08-140	35	34.5	29.7	29.9	36.0
15	NC09-20768	31	33.0	28.6	26.8	32.8
16	OH08-172-42	33	35.0	29.1	31.5	37.0
17	OH07-264-35	37	38.5	33.1	30.7	40.5
18	IL07-4415	31	36.0	30.4	29.1	36.8
19	IL07-19334	31	35.5	30.7	31.5	38.3
20	IL07-20728	33	33.0	28.1	28.0	35.8
21	KWS008	35	38.0	31.8	33.9	40.0
22	KWS009	32	34.5	30.2	31.5	34.3
23	KWS010	30	31.0	28.1	28.0	36.5
24	AR00255-16-1	31	32.0	27.6	27.6	34.0
25	AR01209-2-1	34	35.5	31.5	29.1	37.5
26	KY03C-1237-39	30	33.5	29.7	26.8	35.3
27	LCS10516	34	35.5	31.8	29.1	41.0
28	LCS19228	37	36.0	33.6	31.9	38.5
29	LCS19229	34	34.5	30.2	30.3	36.0
30	GA04121-11E26	33	34.0	29.4	24.8	35.3
31	GA04434-11E44	30	34.5	28.9	29.1	33.3
32	P04606RA1-1-7-1-6-3	32	36.0	29.9	29.1	37.5
33	P05247A1-7-3-121	31	31.5	28.3	27.6	33.3
34	P05222A1-1-2-7	26	29.0	24.4	22.8	29.8
35	DANW1006	37	40.5	35.2	34.6	40.5
36	DANW1008	33	36.5	29.7	32.3	37.5
37	MD04W249-11-7	36	35.5	32.3	31.5	37.3
38	MD04W249-11-12	32	34.0	31.0	28.7	36.3
39	MD04W249-11-16	36	36.5	21.5	31.5	37.3
LOCATION MEANS	32.5	34.5	29.6	29.4	36.0	

HEIGHT (inches)

		Warsaw VA Griffey	Arlington WI Conley/Roth	ENTRY MEANS ALL LOCATIONS	rank
1	Branson	37.0	32.3	33.9	22
2	Bess	36.5	34.3	34.9	15
3	Shirley	34.5	29.7	31.9	35
4	MO080104	38.0	34.7	36.4	6
5	NC08-23324	34.0	32.7	32.6	28
6	KY03C-1237-32	32.5	30.0	31.1	38
7	KY03C-1002-02	34.5	33.0	32.2	30
8	VA08MAS-369	34.0	32.0	32.0	33
9	VA09W-73	36.0	33.3	33.5	24
10	VA10W-21	35.0	31.7	32.7	27
11	DANW1003	39.5	39.0	38.8	1
12	OH08-180-48	35.0	34.0	34.3	19
13	ARS07-0525	34.5	31.3	31.9	36
14	NC08-140	33.5	33.7	34.5	18
15	NC09-20768	34.0	33.0	32.4	29
16	OH08-172-42	38.0	33.7	35.5	14
17	OH07-264-35	39.5	36.0	38.0	3
18	IL07-4415	37.5	32.7	34.5	17
19	IL07-19334	38.0	34.0	35.5	13
20	IL07-20728	37.5	31.0	34.6	16
21	KWS008	40.0	35.0	37.2	4
22	KWS009	36.5	31.0	33.6	23
23	KWS010	33.5	30.7	32.0	32
24	AR00255-16-1	34.0	30.3	31.3	37
25	AR01209-2-1	38.5	34.3	35.9	9
26	KY03C-1237-39	34.5	32.3	33.0	25
27	LCS10516	37.5	36.3	36.0	8
28	LCS19228	38.5	35.7	36.9	5
29	LCS19229	36.0	32.3	34.3	20
30	GA04121-11E26	34.0	34.3	32.9	26
31	GA04434-11E44	35.5	30.7	31.9	34
32	P04606RA1-1-7-1-6-3	36.0	33.3	35.6	11
33	P05247A1-7-3-121	34.0	30.3	32.1	31
34	P05222A1-1-2-7	29.0	27.7	28.0	39
35	DANW1006	38.5	39.0	38.7	2
36	DANW1008	36.5	34.0	35.6	12
37	MD04W249-11-7	39.0	33.3	35.7	10
38	MD04W249-11-12	36.0	33.3	33.9	21
39	MD04W249-11-16	38.0	36.0	36.3	7
LOCATION MEANS		36.0	33.1	34.2	

LODGING

	Griffin GA Johnson 0-9	Harrisburg IL Murche 0-9	W Lafayette IN Ohm 0-9	Lexington KY Van Sanford 0-9
			Straw Score	
1	Branson	0	6.0	4.1
2	Bess	0	6.0	4.0
3	Shirley	0	5.8	0.7
4	MO080104	0	6.5	4.2
5	NC08-23324	0	5.5	9.0
6	KY03C-1237-32	0	4.3	0.6
7	KY03C-1002-02	0	4.3	3.8
8	VA08MAS-369	0	5.3	3.8
9	VA09W-73	0	5.8	3.8
10	VA10W-21	0	5.8	3.3
11	DANW1003	0	6.8	7.2
12	OH08-180-48	0	6.3	7.5
13	ARS07-0525	3	5.8	5.2
14	NC08-140	2	6.8	4.4
15	NC09-20768	0	6.3	5.8
16	OH08-172-42	0	6.5	6.4
17	OH07-264-35	0	6.0	4.5
18	IL07-4415	0	6.3	9.6
19	IL07-19334	0	7.3	8.5
20	IL07-20728	1	7.3	9.0
21	KWS008	0	6.0	1.6
22	KWS009	0	5.5	2.2
23	KWS010	0	4.8	0.0
24	AR00255-16-1	0	4.5	5.1
25	AR01209-2-1	0	6.8	2.4
26	KY03C-1237-39	2	5.8	1.7
27	LCS10516	4	6.3	2.9
28	LCS19228	0	6.3	2.1
29	LCS19229	0	7.3	3.5
30	GA04121-11E26	2	5.8	5.8
31	GA04434-11E44	0	4.0	2.8
32	P04606RA1-1-7-1-6-3	0	5.8	2.1
33	P05247A1-7-3-121	0	5.5	3.4
34	P05222A1-1-2-7	0	4.8	0.3
35	DANW1006	0	7.5	3.8
36	DANW1008	0	6.0	4.5
37	MD04W249-11-7	0	6.0	3.7
38	MD04W249-11-12	0	5.0	2.9
39	MD04W249-11-16	5	6.0	6.1
LOCATION MEANS	0.5	1.9	5.9	4.2
GROWTH STAGE		heading	harvest	

LODGING

	Columbia MO McKendry 0-9	Ithaca NY Sorrells 0-9	Nairn ON Etienne 0-9	Knoxville TN West 0-9
1 Branson	1.0	5.3	2.0	0.3
2 Bess	1.0	5.0	0.3	4.3
3 Shirley	0.7	3.7	0.0	4.6
4 MO080104	1.0	2.3	0.0	2.6
5 NC08-23324	1.3	2.7	0.7	4.0
6 KY03C-1237-32	0.0	1.3	0.0	2.3
7 KY03C-1002-02	0.0	1.7	0.0	1.0
8 VA08MAS-369	1.0	3.0	0.0	6.3
9 VA09W-73	1.0	4.3	2.3	8.3
10 VA10W-21	0.0	3.3	0.7	1.6
11 DANW1003	1.3	3.7	1.3	7.0
12 OH08-180-48	0.0	3.7	1.7	3.0
13 ARS07-0525	1.0	6.3	0.0	6.3
14 NC08-140	2.0	4.7	2.0	8.6
15 NC09-20768	1.0	2.7	0.0	7.0
16 OH08-172-42	0.7	2.7	1.3	7.6
17 OH07-264-35	1.3	5.0	0.0	3.0
18 IL07-4415	1.0	5.7	0.0	4.3
19 IL07-19334	2.3	6.7	2.0	3.6
20 IL07-20728	2.7	7.7	0.7	7.6
21 KWS008	1.0	2.7	1.0	2.6
22 KWS009	1.0	5.3	0.0	3.0
23 KWS010	0.0	1.7	0.0	1.3
24 AR00255-16-1	1.0	1.0	0.0	4.3
25 AR01209-2-1	0.7	5.3	1.0	5.6
26 KY03C-1237-39	0.3	1.3	0.0	3.0
27 LCS10516	1.0	4.3	0.3	8.6
28 LCS19228	1.0	4.7	1.0	3.6
29 LCS19229	3.0	4.0	2.3	8.0
30 GA04121-11E26	1.7	6.7	0.0	8.6
31 GA04434-11E44	0.0	2.0	0.0	4.6
32 P04606RA1-1-7-1-6-3	1.0	3.0	0.0	0.6
33 P05247A1-7-3-121	0.0	1.7	0.0	0.6
34 P05222A1-1-2-7	0.3	2.0	0.0	1.0
35 DANW1006	1.0	3.7	2.0	6.0
36 DANW1008	0.7	2.3	0.3	5.3
37 MD04W249-11-7	0.7	2.7	0.7	6.0
38 MD04W249-11-12	0.0	2.7	0.3	5.6
39 MD04W249-11-16	2.3	5.0	2.7	9.0
LOCATION MEANS	0.9	3.7	0.7	4.6
GROWTH STAGE				

LODGING

	Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9	
1	Branson	5.0	4.0
2	Bess	7.0	4.5
3	Shirley	4.5	4.5
4	MO080104	2.5	3.5
5	NC08-23324	8.0	8.0
6	KY03C-1237-32	0.0	0.0
7	KY03C-1002-02	4.0	0.5
8	VA08MAS-369	7.5	4.5
9	VA09W-73	8.0	5.0
10	VA10W-21	7.5	5.5
11	DANW1003	8.5	6.5
12	OH08-180-48	8.0	1.0
13	ARS07-0525	8.0	8.0
14	NC08-140	7.5	7.0
15	NC09-20768	8.0	5.0
16	OH08-172-42	7.5	4.0
17	OH07-264-35	5.5	3.5
18	IL07-4415	5.0	5.0
19	IL07-19334	7.5	3.5
20	IL07-20728	8.5	7.0
21	KWS008	8.0	3.5
22	KWS009	7.5	3.5
23	KWS010	0.0	0.0
24	AR00255-16-1	7.0	1.5
25	AR01209-2-1	6.5	7.0
26	KY03C-1237-39	4.5	1.5
27	LCS10516	7.5	6.5
28	LCS19228	4.0	2.5
29	LCS19229	7.5	5.5
30	GA04121-11E26	7.5	4.0
31	GA04434-11E44	8.0	7.5
32	P04606RA1-1-7-1-6-3	6.0	2.0
33	P05247A1-7-3-121	4.0	0.5
34	P05222A1-1-2-7	0.5	1.0
35	DANW1006	6.5	1.5
36	DANW1008	7.0	5.5
37	MD04W249-11-7	7.0	4.5
38	MD04W249-11-12	8.0	7.5
39	MD04W249-11-16	7.5	7.0
LOCATION MEANS		6.2	4.2
GROWTH STAGE			

WINTER DAMAGE

	Lafayette IN Moreno	W Lafayette IN Ohm frost damage % dead	Nairn ON Etienne frost damage 0-9	Warsaw VA Griffey freeze damage 0-9		
1	Branson	1	5	1.0	0.7	0.0
2	Bess	1	5	1.0	0.3	1.0
3	Shirley	1	5	1.5	0.7	0.0
4	MO080104	1	8	0.9	2.3	0.5
5	NC08-23324	3	40	1.2	1.0	3.0
6	KY03C-1237-32	1	8	1.0	1.0	0.5
7	KY03C-1002-02	1	5	1.4	0.7	0.0
8	VA08MAS-369	3	60	2.0	0.0	3.0
9	VA09W-73	3	35	0.8	0.0	1.5
10	VA10W-21	1	8	1.0	0.3	1.0
11	DANW1003	1	5	1.6	0.0	0.0
12	OH08-180-48	3	8	0.9	1.0	0.0
13	ARS07-0525	1	50	1.1	1.7	0.5
14	NC08-140	1	25	1.9	1.0	1.0
15	NC09-20768	1	30	1.9	0.0	0.0
16	OH08-172-42	1	5	1.0	0.0	0.5
17	OH07-264-35	1	8	1.3	0.0	0.0
18	IL07-4415	1	5	1.0	1.0	0.0
19	IL07-19334	1	5	1.0	0.3	0.0
20	IL07-20728	1	10	1.1	0.0	0.0
21	KWS008	1	8	1.2	1.0	0.0
22	KWS009	1	20	1.3	0.7	1.0
23	KWS010	1	5	1.6	0.0	0.0
24	AR00255-16-1	1	8	0.9	1.7	0.0
25	AR01209-2-1	1	20	1.2	0.7	1.0
26	KY03C-1237-39	1	5	1.0	1.0	0.0
27	LCS10516	1	25	1.5	0.7	3.0
28	LCS19228	1	10	0.8	2.7	0.0
29	LCS19229	1	20	0.8	1.0	0.5
30	GA04121-11E26	3	60	1.0	0.3	2.0
31	GA04434-11E44	3	80	1.1	0.0	2.5
32	P04606RA1-1-7-1-6-3	1	30	1.3	0.0	2.0
33	P05247A1-7-3-121	1	10	0.9	1.3	0.0
34	P05222A1-1-2-7	1	20	1.9	0.7	0.0
35	DANW1006	1	5	1.2	1.0	0.0
36	DANW1008	1		0.9	1.0	2.0
37	MD04W249-11-7	5	30	1.3	0.7	0.0
38	MD04W249-11-12	5	40	1.0	0.3	1.5
39	MD04W249-11-16	5	15	1.1	2.0	0.5
LOCATION MEANS		1.6	19.4	1.2	0.7	0.7
DATE						

WINTER DAMAGE

	Arlington WI Conley/Roth	Oconto WI Murche
	0-9	0-9
1 Branson	1.2	1.9
2 Bess	1.7	6.8
3 Shirley	0.0	2.5
4 MO080104	0.3	2.0
5 NC08-23324	0.0	6.7
6 KY03C-1237-32	0.0	6.1
7 KY03C-1002-02	0.0	5.6
8 VA08MAS-369	1.0	7.3
9 VA09W-73	2.0	6.4
10 VA10W-21	0.0	2.0
11 DANW1003	0.5	1.1
12 OH08-180-48	0.3	1.1
13 ARS07-0525	0.5	4.1
14 NC08-140	0.8	7.5
15 NC09-20768	1.0	7.5
16 OH08-172-42	1.5	0.8
17 OH07-264-35	0.5	1.0
18 IL07-4415	0.7	1.0
19 IL07-19334	0.3	3.9
20 IL07-20728	0.0	1.3
21 KWS008	0.3	4.2
22 KWS009	0.0	2.8
23 KWS010	0.8	2.1
24 AR00255-16-1	0.3	3.6
25 AR01209-2-1	0.0	5.6
26 KY03C-1237-39	0.3	2.7
27 LCS10516	2.8	6.6
28 LCS19228	0.0	1.4
29 LCS19229	0.8	1.9
30 GA04121-11E26	1.7	8.6
31 GA04434-11E44	1.0	8.2
32 P04606RA1-1-7-1-6-3	0.7	7.1
33 P05247A1-7-3-121	0.8	2.4
34 P05222A1-1-2-7	4.2	3.7
35 DANW1006	0.7	1.1
36 DANW1008	0.3	0.7
37 MD04W249-11-7	0.8	7.8
38 MD04W249-11-12	0.0	6.3
39 MD04W249-11-16	0.7	6.9
LOCATION MEANS	0.7	4.1
DATE	May 1	

LEAF RUST

	Lafayette IN Moreno	Blacksburg VA Griffey 0-9	
1	Branson	3	0.5
2	Bess	7	6.0
3	Shirley	3	0.0
4	MO080104	5	5.5
5	NC08-23324	1	0.5
6	KY03C-1237-32	9	7.0
7	KY03C-1002-02	5	5.0
8	VA08MAS-369	1	3.5
9	VA09W-73	1	0.0
10	VA10W-21	5	3.5
11	DANW1003	9	4.0
12	OH08-180-48	3	3.0
13	ARS07-0525	5	0.5
14	NC08-140	1	0.0
15	NC09-20768	3	0.5
16	OH08-172-42	1	7.0
17	OH07-264-35	7	1.0
18	IL07-4415		0.0
19	IL07-19334	5	4.0
20	IL07-20728	3	0.0
21	KWS008	9	7.0
22	KWS009	1	1.0
23	KWS010	3	5.0
24	AR00255-16-1	7	1.5
25	AR01209-2-1	5	5.5
26	KY03C-1237-39	5	6.0
27	LCS10516	5	3.0
28	LCS19228		4.0
29	LCS19229	3	2.0
30	GA04121-11E26	1	0.5
31	GA04434-11E44	1	0.0
32	P04606RA1-1-7-1-6-3	5	4.0
33	P05247A1-7-3-121	3	0.0
34	P05222A1-1-2-7	1	0.0
35	DANW1006	7	6.0
36	DANW1008	7	6.0
37	MD04W249-11-7	5	7.5
38	MD04W249-11-12	5	5.0
39	MD04W249-11-16	7	5.5
LOCATION MEANS		4.2	3.1

LEAF RUST (seedling)

		St. Paul MN Kolmer					
		Lr gene(s)	MCTNB	TDBGG	TBBGJ	MCDSB	KFBJG
1	Branson	Lr2a	0;	3+	3+	;	3+
2	Bess	---	4	3+	3+	3+	3+
3	Shirley	Lr26, +	0;	;	0;	;	3+
4	MO080104	Lr14a	4	;	32;	33+	3+2+
5	NC08-23324	Lr9, 24	0;	0;	0;	0;	0;
6	KY03C-1237-32	poor seed germ	-	-	-	-	-
7	KY03C-1002-02	poor seed germ	-	-	-	-	-
8	VA08MAS-369	Lr24	0;	3+	;	;	3+
9	VA09W-73	Lr9, 17	0;	0;	0;	;	0;
10	VA10W-21	Lr2a	0;	3	3+	;	3+
11	DANW1003	Lr26, +	4	;	;	2+3	32+
12	OH08-180-48	Lr24	0;	23	;	;	3
13	ARS07-0525	Lr26,+	3+	;	;	3+	3+
14	NC08-140	?	3+2+	;/2-	3+	;/1-	3
15	NC09-20768	?	32;	32	;/2	;	3-2+;
16	OH08-172-42	Lr24, 26	0;	0;3	;	;	3+
17	OH07-264-35	+	;/1-	;/1	;/1+	;/1-	;
18	IL07-4415	---	4	3	3+	3+	3+
19	IL07-19334	---	4	32+	3+	3+	3+
20	IL07-20728	Lr24	0;	;/12-3	;	;	0;
21	KWS008	---	4	3	3+	;/2	32+
22	KWS009	Lr17, 26	3+	0;	0;	3+	0;
23	KWS010	Lr26, +	;	;	;	2+;	32+
24	AR00255-16-1	---	3+	3+;	3+	3+	3+
25	AR01209-2-1	Lr1	3+	3+	3+	3+	0;
26	KY03C-1237-39	poor seed germ	-	-	-	3+	-
27	LCS10516	---	3+	;/2+	3+;(x)	3+	3+
28	LCS19228	---	3+	3+	3+	3+	3+
29	LCS19229	Lr10	0;	0;/3	3+;	3+	3+
30	GA04121-11E26	?	0;	;	;	3+	3+;
31	GA04434-11E44	Lr10, 11	0;	;	;	;	;/2-
32	P04606RA1-1-7-1-6-3	Lr26,+	3+	;	;	3+	3+
33	P05247A1-7-3-121	Lr1, 26, +	3+	;	;	3+	0;
34	P05222A1-1-2-7	Lr26,+	3+	-	;/1-	3+	3+
35	DANW1006	---	3+	0;	;/22+	3+	3+
36	DANW1008	Lr26,+	3+	0;	;	22+	32+;
37	MD04W249-11-7	Lr26,+	4	;/3	;	32+	32+
38	MD04W249-11-12	Lr26,+	4	;	;	32+;	32+
39	MD04W249-11-16	Lr1	4	22+3	3+	3+	0;

--- = no Lr gene present

+ = additional seedling resistance present

? = unable to postulate Lr gene

LEAF RUST (seedling)

St. Paul
MN

Kolmer

	MLDSD	TCRKG	TFBJQ	TCTSB	TNRJJ
1 Branson	;	3+	3+	3+	3+
2 Bess	3+	3+	3+	3+	3+
3 Shirley	0;	;2-	;	;22+	;
4 MO080104	32+;	3+	;23	3+	3+
5 NC08-23324	;	0;	0;	0;	3+
6 KY03C-1237-32	-	-	-	-	3+
7 KY03C-1002-02	-	-	-	-	32+
8 VA08MAS-369	;	;	3+;	;	3+
9 VA09W-73	3+	0;	0;	;	;
10 VA10W-21	;	3+	3+	3+	3
11 DANW1003	;	;2-	;	3+	;
12 OH08-180-48	;	0;	;2-	0;	32+
13 ARS07-0525	;	;1-	;2-	3+	2;
14 NC08-140	2+3	3+	;1-	;1-	3+
15 NC09-20768	32+	;+	;2-	32+;	-
16 OH08-172-42	;	;	3+	;	-
17 OH07-264-35	;	;1-	;2-	;1-	;
18 IL07-4415	3+	3+	3+	3+	3+
19 IL07-19334	3+	3+	3+	3+	3+
20 IL07-20728	;	0;	3+	0;	3+
21 KWS008	;2+3	3+	3+	3+	3+
22 KWS009	;	;2-	;	3+	;
23 KWS010	;	3;	;	3+	;
24 AR00255-16-1	3+	3+	3+	3+	3+
25 AR01209-2-1	3+	3+	3+	3+	3+
26 KY03C-1237-39	-	-	-	-	-
27 LCS10516	3+	3+	3+	3+	3+
28 LCS19228	3+	3+	3+	3+	3+
29 LCS19229	3+	3+	3+	3+	3+
30 GA04121-11E26	3+	;	;2-	;	3+
31 GA04434-11E44	;	32+;	;2-	3+	3+
32 P04606RA1-1-7-1-6-3	;3+	;2-	;2	3+	;
33 P05247A1-7-3-121	;	;2-	;2-	32+	;
34 P05222A1-1-2-7	;	;2-	;2-	3+	;
35 DANW1006	3+	3+	3+2+;	3+	3+
36 DANW1008	;	;12-	;1	3+	;
37 MD04W249-11-7	;	;12	;12-	3+	;
38 MD04W249-11-12	;	;12	;	3+	;
39 MD04W249-11-16	3+	3+	3+	3+	3+

LEAF RUST (seedling)

Blacksburg

VA

Griffey

13VT Lr-races TCRK + MFQS

13VT Lr-race TNRJ

	13VT Lr-races TCRK + MFQS	13VT Lr-race TNRJ
1 Branson	;3	3
2 Bess	3	3
3 Shirley	;1	0;
4 MO080104	3	3
5 NC08-23324	;2	3
6 KY03C-1237-32	;2	23
7 KY03C-1002-02	23;	23
8 VA08MAS-369	3	3
9 VA09W-73	0;	23
10 VA10W-21	;12	3/Tr12;
11 DANW1003	3	0;?
12 OH08-180-48	3	3
13 ARS07-0525	2;	;1-
14 NC08-140	12-;	1;Tr23
15 NC09-20768	1;	12;Tr3
16 OH08-172-42	3	3
17 OH07-264-35	1-	1;
18 IL07-4415	3	23-
19 IL07-19334	23	3
20 IL07-20728	23	3
21 KWS008	3	3
22 KWS009	3	1;
23 KWS010	3	;1=
24 AR00255-16-1	3	3
25 AR01209-2-1	3	3
26 KY03C-1237-39	23;	0;/2
27 LCS10516	23;/Tr0;	3/Tr12;
28 LCS19228	3	3
29 LCS19229	3	3
30 GA04121-11E26	1;	12-;
31 GA04434-11E44	;1=	12-;
32 P04606RA1-1-7-1-6-3	3	;1-
33 P05247A1-7-3-121	3;	0;
34 P05222A1-1-2-7	23;	;1=
35 DANW1006	3	3
36 DANW1008	3	;1
37 MD04W249-11-7	3	3
38 MD04W249-11-12	3	;1-
39 MD04W249-11-16	3	3

VA Lr Race - TNRJ

Vir: Lr1, 2a, 2c, 3, 3ka, 9, 10, 11, 14a, 24, 30

VA Lr Race -TCRK +

Vir:Lr1, 2a, 2c, 3, 3ka, 10, 11, 14a, 18, 26, 30

VA Lr Race - MFQS

Vir:Lr1, 3, 3ka, 10, 11, 14a, 24, 26, B

STEM RUST

Jin, St. Paul, MN

				QFCSC	QTHJC	MCCFC	RCRSC	RKQQC	TPMKC	TTTTF	SCCSC	QCCSM	TTKSK	TTKSK	TTKST	TTTSK	TRTTF	NOTES 1	NOTES 2	2013 St Paul Field stem rust nursery	
	CDL			06ND76C	75ND717C	59KS19	77ND82A	99KS76A-1	74MN1409	01MN84A-1-2	09ID73-2	75WA165-2A	04KEN15604	04KEN15604	06KEN19V3	07KEN24-4	06YEM34-1		Gene	X-14 field	Buckthorn nursery
Repeat	12/13#	Nursery	Line																Postulation		rep2
58	85	Local ck 1	McNair 701	3+	3/2+	4	4	3+	3+	3+	4	3+	4/2	3+	3+	3+	3+				90S
59	86	Local ck 2	Red Chief	2+	2+	3+	3	3+	3+	3+	2+3	2+3	2+3	-	-	-	-				90S
60	87	UESR 1	Branson	2-	3+	;2-	3+	3+	2+3	3+	2-	2-;	3	3+	4	3+	4				50MSS
61	88	UESR 2	Bess	4/2	3+	3+	4	4	3+/2+	4	4	3	4	3+	3+	3+	3+				60S
62	89	UESR 3	Shirley	;	0	0	2-	2-	;	1	0	0	2-	0;	0	3+	2-		Sr36		TR
	90	UESR 4	MO080104	4	4	4	4	3+	4	3	3+	4	4								80S
63	91	UESR 5	NC08-23324	2-	2	2	2	2	2	2-	2-;	2-;	2-	0/2	2	0/2-	2-				30RMR
	92	UESR 6	KY03C-1237-32	3+	3	3+	3+	3+	3+	3+	3+	3	3+								90S
	93	UESR 7	KY03C-1002-02	3+	3+	3+	3+/2-	3+	3+	3+	3-	3	4								80S
64	94	UESR 8	VA08MAS-369	2	2	2-	2-	2-	2-	2-	2-;	2-	2-;	2-	2	2/;	2-				20RMR
	95	UESR 9	VA09W-73	4	4	4	4	3+	4	4	4	4	4								70MSS
	96	UESR 10	VA10W-21	4	4	4	4	3+	4	4	3+	4	4								90S
	97	UESR 11	DANW1003	2-	2	2-	2-;	2-	2-	2-	2-	2	4								30MR
65	98	UESR 12	OH08-180-48	2-	2	2-/3	2-	2-;	2-/4	2-	2-	4	2-	0/2-	2+	2-	2-		Sr24		20RMR
66	99	UESR 13	ARS07-0525	0;	0;	0;	;/4	0;	2-;/2/4	1-;/3	0;	;/1-	;/1-	0	0	4	2-		Sr36		TR
67	100	UESR 14	NC08-140	0;	0;	0;	4	4 LIF	4	4	0	0;	0;	0	0	4	3+		Sr36		20MS/40S
68	101	UESR 15	NC09-20768	0;	;	;	3/2-	4 LIF	4/2	4	;	0;	0;	0	0	4	3+		Sr36		20MS
69	102	UESR 16	OH08-172-42	2-	2	2	2-	2	2	2	2-	2	2-	0	2	2-	2-				30RMR
	103	UESR 17	OH07-264-35	;/1-C	13;	;/1-	4	4 LIF/2-	4/2	4	2-;C	;/1-2-	4								TR
	104	UESR 18	IL07-4415	13;	31;/13	;/1-/13-;	31;	4 LIF	4	4	31;/13;	;/13/31;	4								10MR,55
	105	UESR 19	IL07-19334	3	3/2	3	3	4	4	4	4/2	4	4								30MRMS
70	106	UESR 20	IL07-20728	2	2	2	2	2	2	2	2	4	2-	0	2+	2-	2-		Sr24		20RMR
	107	UESR 21	KWS008	3-/2	3	3/2-	3	31/1	4/2	3	4/2	4/2	4								70S
	108	UESR 22	KWS009	2-	2-	1-;	2-	;/0;	2-	2-	2	2-	4								20RMR
71	109	UESR 23	KWS010	0;	0;	0;	2-	2- LIF	2-; LIF	2-; LIF	0;	0;	0;	0	0	3+	2-		Sr36		0
	110	UESR 24	AR00255-16-1	3	4	3	3	4	4	4	4	4	4								50MRMS
72	111	UESR 25	AR01209-2-1	2-	2-/3;	2-	4/2	4/2-	2+3	4/2	2/2-	2/2-	2/4	3+/0	3	3	3+				60MRMS
	112	UESR 26	KY03C-1237-39	3-/2-	2+3/2-	3/2-	3;/2-	2-/4	3;/2-	4;/2-	4/2-	4	3+								80S
	113	UESR 27	LCS10516	3	3	3/;	3	4	3	4	4	4	3								70MSS
	114	UESR 28	LCS19228	2	3	2-/3/0	3	1;	2	4	2	2	4								80S
73	115	UESR 29	LCS19229	0;	0;	0;	3	4	3	4	0;	0;/1 LIF	0;	0	0/3+	3+	3+		Sr36		20MRMS
74	116	UESR 30	GA04121-11E26	1;	;/13-	;/1-	13-;/;	;	31;	31	;/1	1;/13-;/;	2	2+	2/3	2	3+				10MSS

STEM RUST

Jin, St. Paul, MN

				QFCSC	QTHJC	MCCFC	RCRSC	RKQQC	TPMKC	TTTTF	SCCSC	QCCSM	TTKSK	TTKSK	TTKST	TTTSK	TRTTF	NOTES 1	NOTES 2	2013 St Paul Field stem rust nursery									
	CDL			06ND76C	75ND717C	59KS19	77ND82A	99KS76A-1	74MN1409	01MN84A-1-2	09ID73-2	75WA165-2A	04KEN156/04	04KEN156/04	06KEN19V3	07KEN24-4	06YEM34-1		Gene	X-14 field	Buckthorn nursery								
Repeat	12/13#	Nursery	Line																Postulation		rep2								
75	117	UESR 31	GA04434-11E44	2-C	13-;/;13-	;1C/;	3	4 LIF	2	4	2-C	1-1;C	3	3+	3+	3+	3+				10MSS								
76	118	UESR 32	P04606RA1-1-7-1-6-3	2-	2-	2-	;/1	0;	2-	;	2-	2-	3	3	3	3	2-				10RMR								
	119	UESR 33	P05247A1-7-3-121	;1-/3-	;/;1-	;	;	0;	1-;	2-	;/;1-	;	4								TR								
77	120	UESR 34	P05222A1-1-2-7	0;/3	0;	0;	;	0;	;	;/1-	0;	0;	0;	0	0	3+	2-		Sr36		TR								
	121	UESR 35	DANW1006	2	4	2	4	4	2	4	2	2	4								70S								
	122	UESR 36	DANW1008	2	2	2-	2-;	2-	2-2	2-;	2-	2-	4								20MR								
	123	UESR 37	MD04W249-11-7	2	2	2-	2-;	2-	2	2-	2-	2	4								20MR								
	124	UESR 38	MD04W249-11-12	2/4	2/0;	2-	2-;	2-	2	2-;	2-	2	4								30MR								
	125	UESR 39	MD04W249-11-16	2/4	2	4/2-	4	4/2-	4/2	4/2-	3+/2-	4/2	4								60MRMS								
<p>Notes and explanations for seedling testing:</p> <p>Races Common US race bulk: MCCFC, QFCSC, QTHJC, RCRSC, RKQQC, TPMKC, TTTTTF</p> <p>2 US races with unique virulence: SCCSC (virulent to Sr9e, Sr13), QCCSM (virulent to Sr24)</p> <p>For updated race nomenclature, please refer to: Jin et al. 2008 Plant Dis. 92:923-926.</p> <p>Ratings Infection type (IT) 3 or 4 are considered susceptible</p> <p>"/" denotes heterogeneous, the predominant type given first.</p> <p>"LIF" denotes low infection frequency, or fewer number of pustules.</p> <p>"C" stands for excessive chlorosis</p> <p>"N" stands for excessive necrosis</p> <p>Gene postulations are tentative and done for genes effective against TTKSK (Ug99) only. No attempt was made to postulate other Sr genes.</p> <p>Users are advised to confirm with available markers.</p> <p>"Sr2 mosaic" was referred to seedling chlorosis, similar to Sr2 expression in seedling under certain environments</p> <p>Repeated screening was done based on preliminary screening with race TTKSK (rep 1). Lines missing or suspected to be resistant were repeated with 3 races of the TTKS lineage: TTKSK (Ug99), TTKST (Sr24 virulence), and TTTSK (Sr36 virulence).</p> <p>Avirulence/virulence formula of stem rust races used in screening:</p> <table border="0"> <tr> <td>race</td> <td>Avirulence</td> <td>Virulence</td> </tr> <tr> <td>MCCFC</td> <td>6 8a 9b 9d 9e 11 24 30 31 36 38</td> <td>5 7b 9a 9g 10 17 Tmp McN</td> </tr> <tr> <td>QCCSM</td> <td>6 7b 8a 9b 9e 11 30 31 36 38 Tmp</td> <td>5 9a 9d 9g 10 17 21 24 McN</td> </tr> </table>																					race	Avirulence	Virulence	MCCFC	6 8a 9b 9d 9e 11 24 30 31 36 38	5 7b 9a 9g 10 17 Tmp McN	QCCSM	6 7b 8a 9b 9e 11 30 31 36 38 Tmp	5 9a 9d 9g 10 17 21 24 McN
race	Avirulence	Virulence																											
MCCFC	6 8a 9b 9d 9e 11 24 30 31 36 38	5 7b 9a 9g 10 17 Tmp McN																											
QCCSM	6 7b 8a 9b 9e 11 30 31 36 38 Tmp	5 9a 9d 9g 10 17 21 24 McN																											

STRIPE RUST

	Griffin GA Johnson 0-9	Lafayette IN Obert 0-9	Lafayette IN Moreno	Central Ferry WA Campbell 0-10	Pullman WA Campbell 0-10
1 Branson	0	1.0	1	1.0	5.4
2 Bess	0	2.5	1	3.5	6.5
3 Shirley	2	2.0	5	2.5	6.6
4 MO080104	0	1.0	1	3.5	6.4
5 NC08-23324	0	4.0	5	4.5	6.9
6 KY03C-1237-32	0	1.0	3	2.5	4.8
7 KY03C-1002-02	0	4.0	1	3.0	6.8
8 VA08MAS-369	0	1.0	1	3.0	6.0
9 VA09W-73	0	4.0	1	5.0	5.5
10 VA10W-21	2	2.5	1	6.0	6.9
11 DANW1003	0	5.5	3	4.5	6.3
12 OH08-180-48	0	1.5	1	3.5	6.4
13 ARS07-0525	0	1.0	1	2.5	4.3
14 NC08-140	0	1.5	3	2.0	6.3
15 NC09-20768	0	1.5	3	4.0	5.5
16 OH08-172-42	2	1.5	7	3.0	6.6
17 OH07-264-35	0	2.0	1	1.0	3.0
18 IL07-4415	0	3.0		4.0	5.5
19 IL07-19334	0	2.0	1	2.0	5.3
20 IL07-20728	0	2.5	1	4.0	5.4
21 KWS008	0	1.5	5	4.0	6.5
22 KWS009	0	2.5	5	4.0	7.1
23 KWS010	0	4.5	1	3.0	6.5
24 AR00255-16-1	0	2.5	1	2.5	5.8
25 AR01209-2-1	0	2.5	3	2.0	5.6
26 KY03C-1237-39	1	3.0	5	4.0	6.6
27 LCS10516	0	2.5	5	4.5	7.0
28 LCS19228	0	1.0		3.0	6.9
29 LCS19229	0	1.0	1	3.0	5.1
30 GA04121-11E26	0	1.0	1	1.5	3.5
31 GA04434-11E44	0	0.5	1	2.0	3.6
32 P04606RA1-1-7-1-6-3	0	1.0	3	5.0	7.0
33 P05247A1-7-3-121	0	2.5	1	1.0	1.5
34 P05222A1-1-2-7	0	1.0	1	2.5	2.8
35 DANW1006	0	2.0	5	2.5	6.8
36 DANW1008	0	4.5	5	5.0	6.6
37 MD04W249-11-7	1	6.0	1	3.5	6.8
38 MD04W249-11-12	0	5.5	1	2.0	5.0
39 MD04W249-11-16	0	2.0	3	1.0	4.6
LOCATION MEANS	0.2	2.4	2.4	3.1	5.7
GROWTH STAGE / DATE				10.3 / May 10	10.3 / June 18

STRIPE RUST

Chen

TABLE XMC1315F. STRIPE RUST INFECTION TYPE (IT*) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE WINTER EASTERN WHEAT NURSERY (EXP15) (COORDINATED BY HAROLD BOCKELMAN) (UNIFORM EASTERN SOFT RED WINTER WHEAT NURSERY) AT WHITLOW FARM (LOC 04) NEAR PULLMAN, MT VERNON (LOC 05), WALLA WALLA (LOC 06), AND LIND (LOC 07), WA WHEN RECORDED AT THE INDICATED DATES AND STAGES OF PLANT GROWTH, 2013 UNDER NATURAL INFECTION

Cultivar/ Designation	Pedigree	Entry No.	Contributor	1st year in nurs.	2013 PLOT	LOC 04		LOC 05		LOC 06		LOC 07			
						6/26		5/1		6/4		5/31		6/12	
						Heading	Stem elong.	Head./Flower.	Flowering	Flowering	IT	%	IT	%	IT
PS 279	(SUSCEPTIBLE CHECK)				1	8	100	8	80	8	15	8	80	8	30
Branson	Pio2737W/891-4584A (Pike/	1	Check	03-04	2	8	60	...	...	...	...	5	35	5	15
Bess	MO11769/Madison (formerly	2	Check	02-03	3	8	80	...	...	...	...	8	40	5	20
Shirley	VA94-52-25 /Coker 9835//VA	3	Check	05-06	4	8	100	5	30	8	70	8	70	5	25
MO080104	L910097/MO 92-599	4	Check	09-10	5	8	50	5	20	5	40	5,8	50	5	15
NC08-23324	B960164/NC94-7197//McCo	5	Murphy	11-12	6	8	100	8	60	8	100	8	100	5	25
KY03C-1237-32	P25R18/KY92C-0010-17//KY	6	Van Sanford	11-12	7	3	20	2	20	5	25	5	50	5	5
KY03C-1002-02	P25W33/P25W60//P25W33/	7	Van Sanford	11-12	8	8	100	8	60	8	100	8	80	5	20
VA08MAS-369	McCormick/GA881130LE5	8	Griffey	11-12	9	8	90	3	305	5	20	8	70	5	5
VA09W-73	SS520/VA99W-188(VA91-54	9	Griffey	11-12	10	5	30	5	50	0	0	8	70	5	5
VA10W-21	Z00-5018(U90-1A//ZX90-2C	10	Griffey	11-12	11	8	100	8	80	8	100	8	90	8	30
DANW1003	TW165-065/P25R23	11	Etienne	11-12	12	8	90	8	80	5	80	8	80	8	30
OH08-180-48	Douglas/McCormick	12	Sneller	11-12	13	8	95	8	80	5	50	8	80	5	25
ARS07-0525	GA951395-10-7/TX99D4031	13	Marshall	11-12	14	8	95	2	20	3	5	8	95	5	15
NC08-140	P26R61/TC14Spear 2289B//	14	Murphy	12-13	15	8	95	7	50	5	30	8	80	5	15
NC09-20768	NC00-16203//P26R24/NC96	15	Murphy	12-13	16	8	80	7	60	5	15	8	65	2	25
OH08-172-42	Douglas/Jekyl	16	Sneller	12-13	17	8	100	8	60	8	90	8	50	8	60
OH07-264-35	OH708/P92145E8-7-7-1-9	17	Sneller	12-13	18	8	20	5	40	5	30	8	65	5	10
IL07-4415	P96169RE2-3-6-4/IL01-3415	18	Kolb	12-13	19	8	90	3	30	8	100	8	70	5	70
IL07-19334	IL01-36115/IL79-008T-B-B(D	19	Kolb	12-13	20	8	70	4	30	5	35	8	50	5	20
PS 279	(SUSCEPTIBLE CHECK)				21	8	100	8	80	8	85	8	80	8	80
IL07-20728	McCormick/IL97-1828//IL00-	20	Kolb	12-13	22	3	10	5	30	2	15	5	70	5	5
KWS008	T127/M98-2152	21	Murche	12-13	23	8	100	8	50	5	50	8	80	8	25
KWS009	VA99W-206/GA90552AE33	22	Murche	12-13	24	8	100	8	60	8	95	8	80	8	25
KWS010	VAN97W-386/VA99W-164	23	Murche	12-13	25	5	30	4	30	5	20	5	70	5	15
AR00255-16-1	Roane/LA9070G45-3-3-1	24	Mason	12-13	26	5	40	2	30	3	10	5	65	5	5
AR01209-2-1	AGS2000/PI531193(JGI)	25	Mason	12-13	27	3	20	3	30	5	25	5	35	5	10

STRIPE RUST

Chen

Cultivar/ Designation	Pedigree	Entry No.	Contributor	1st year in nurs.	2013 PLOT	LOC 04		LOC 05				LOC 06		LOC 07	
						6/26		5/1		6/4		5/31		6/12	
						Heading	Stem elong.	Head./Flower.	Flowering	Flowering					
IT	%	IT	%	IT	%	IT	%	IT	%	IT	%				
KY03C-1237-39	P25R18/KY92C-0010-17//KY	26	Van Sanford	12-13	28	8	100	5	30	8	100	5	70	5	15
LCS10516	MO1-4377/96229-3E39	27	Obert	12-13	29	8	100	8	60	8	95	5,8	70	5	10
LCS19228	T814/L900819//VA98W-591	28	Obert	12-13	30	8	100	7	60	8	95	5	70	5	30
LCS19229	VA98W-593//L900819/C916	29	Obert	12-13	31	8	80	6	40	5	60	5	70	5	15
GA04121-11E26	GA98302/SC996284	30	Johnson	12-13	32	5	40	4	60	5	25	5	60	5	5
GA04434-11E44	GA961565-2E46/AGS2485//	31	Johnson	12-13	33	8	90	4	40	5	20	5	50	5	5
P04606RA1-1-7-1-6-	Truman/961341A3-1-4-6	32	Ohm	12-13	34	8	100	...	...	...	...	8	35	5	75
P05247A1-7-3-121	99840C4-8/03726A1//99840	33	Ohm	12-13	35	5	20	5	40	3	5	5	25	5	5
P05222A1-1-2-7	99840C4-8/5/99593RA1-7/6	34	Ohm	12-13	36	8	100	7	60	5	25	5	50	5	15
DANW1006	25R23/TW106-048	35	Etienne	12-13	37	8	100	8	60	5	70	8	35	5	20
DANW1008	TW165-065/25R23	36	Etienne	12-13	38	8	100	8	60	5	70	8	35	8	20
MD04W249-11-7	MV8-29/25R42	37	Costa	12-13	39	8	100	5	60	5	50	8	70	5	25
MD04W249-11-12	MV8-29/25R42	38	Costa	12-13	40	5	20	5	60	3	10	5	30	5	5
MD04W249-11-16	MV8-29/25R42	39	Costa	12-13	41	5	30	5	60	2	15	5	20	2	5
PS 279	(SUSCEPTIBLE CHECK)				42	8	100	8	80	8	70	8	70	8	25
PS 279	(SUSCEPTIBLE CHECK)				43	8	100	8	80	8	80	8	70	8	25
PS 279	(SUSCEPTIBLE CHECK)				44	8	100	8	80	8	80	8	70	8	25
PS 279	(SUSCEPTIBLE CHECK)				45	8	100	8	80	8	75	8	70	8	30
PS 279	(SUSCEPTIBLE CHECK)				46	8	100	8	80	8	75	8	70	8	25
PS 279	(SUSCEPTIBLE CHECK)				47	8	100	8	80	8	80	8	70	8	20
PS 279	(SUSCEPTIBLE CHECK)				48	8	100	8	80	8	75	8	70	8	25
PS 279	(SUSCEPTIBLE CHECK)				49	8	100	8	80	8	80	8	70	8	25
END OF NURSERY	HUNDRED BARLEY (FILL)				50	END	END	END	END	END	END	END	END	END	END

* Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs. Entries with a high IT in the first note, but a low IT in the second note at LOC 05 may indicate that they have high-temperature, adult-plant (HTAP) resistance.

STRIPE RUST

Chen

TABLE XMC1315GH. STRIPE RUST INFECTION TYPE (IT) ON SEEDLINGS AND ADULT-PLANTS OF CULTIVARS AND LINES IN THE WINTER EASTERN WHEAT NURSERY (EXP15) COORDINATED BY HAROLD BOCKLMAN (UNIFORM EASTERN SOFT RED WINTER WHEAT NURSERY) TESTED WITH SELECTED *Puccinia striiformis* f. sp. *tritici* (PST) RACES UNDER CONTROLLED GREENHOUSE CONDITIONS AT LOW TEMPERATURES (DIURNAL TEMPERATURES GRADUALLY CHANGING FROM 4 TO 20°C FOR THE SEEDLING TESTS AND AT HIGH TEMPERATURES (DIURNAL TEMPERATURES GRADUALLY CHANGING FROM 10 TO 30°C) FOR THE ADULT-PLANT TESTS (Seed of all entries were not treated with fungicides)

Cultivar/ Designation	Pedigree	Entry No.	Contributor	1st year in nurs.	2013 PLOT	Infection type produced by PST races ^a								Possible HTAP ^c resistance
						Seedling Test ^b (4 - 20 C)					Adult-plant Test ^b (10 - 30 C)			
						PSTv-4	PSTv-14	PSTv-37	PSTv-40	PSTv-51	PSTv-14	PSTv-37	PSTv-40	
PS 279	(SUSCEPTIBLE CHECK)				1	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
Branson	Pio2737W/891-4584A (Pike/FL302) (formerl	1	Check	03-04	2	8	8	8	8	8	3,4,4	3,3,3	3,4,4	Moderate
Bess	MO11769/Madison (formerly MO981020)	2	Check	02-03	3	8	8	8	8	8	3,3,3	5,5,5	3,2,2	Moderate
Shirley	VA94-52-25 /Coker 9835//VA96-54-234 (form	3	Check	05-06	4	8	8	8	8	8	3,8,8	8,8,8	8,8,8	No
MO080104	L910097/MO 92-599	4	Check	09-10	5	8	8	8	8	8	2,2,3	3,3,5	2,2,3	High
NC08-23324	B960164/NC94-7197//McCormick	5	Murphy	11-12	6	8	8	8	8	8	3,3,5	8,8,8	8,8,8	No
KY03C-1237-32	P25R18/KY92C-0010-17//KY96C-0767-1	6	Van Sanford	11-12	7	8	8	8	8	8	2,2,3	6,6,6	2,2,3	Low
KY03C-1002-02	P25W33/P25W60//P25W33/KY90C-042-37-1	7	Van Sanford	11-12	8	8	8	8	2,8	8	8,8,8	8,8,8	2,2,8	No
VA08MAS-369	McCormick/GA881130LE5	8	Griffey	11-12	9	8	8	8	8	8	3,3,5	2,8,8	2,2,5	No
VA09W-73	SS520//VA99W-188(VA91-54-343/Roane'S')/	9	Griffey	11-12	10	8	8	8	8	8	4,4,6	5,5,5	2,2,2	Moderate
VA10W-21	Z00-5018(U90-1A//ZX90-2C1/P2580)//VA01V	10	Griffey	11-12	11	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
DANW1003	TW165-065/P25R23 [previously ente	11	Etienne	11-12	12	8	8	8	8	8	9,9,9	8,8,8	8,8,8	No
OH08-180-48	Douglas/McCormick	12	Sneller	11-12	13	8	8	8	8	8	6,8,8	8,8,8	2,8,8	No
ARS07-0525	GA951395-10-7//TX99D4031	13	Marshall	11-12	14	8	8	8	8	8	2,2,2	8,8,8	2,2,2	No
NC08-140	P26R61/TC14Spear 2289B//NC00-16203	14	Murphy	12-13	15	8	2	8	8	8	2,2,3	2,8,8	2,8,8	No
NC09-20768	NC00-16203//P26R24/NC96-13965	15	Murphy	12-13	16	8	8	8	8	8	3,8,8	3,8,8	8,8,8	No
OH08-172-42	Douglas/Jekyl	16	Sneller	12-13	17	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
OH07-264-35	OH708/P92145E8-7-7-1-9	17	Sneller	12-13	18	8	8	8	8	8	2,2,8	8,8,8	2,2,2	No
IL07-4415	P96169RE2-3-6-4//IL01-34159(IL84-2191//IL8	18	Kolb	12-13	19	8	2	8	8	8	2,2,2	5,8,8	3,3,3	No
IL07-19334	IL01-36115//IL79-008T-B-B(DH from IL94-672	19	Kolb	12-13	20	8	8	8	8	8	3,5,5	3,4,4	2,2,2	Moderate
PS 279	(SUSCEPTIBLE CHECK)				21	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
IL07-20728	McCormick//IL97-1828//IL00-8061	20	Kolb	12-13	22	8	8	8	8	2,8	5,6,8	3,3,3	2,3,3	Low
KWS008	T127/M98-2152	21	Murche	12-13	23	8	8	8	8	8	5,5,5	8,8,8	8,8,8	No
KWS009	VA99W-206/GA90552AE33	22	Murche	12-13	24	8	8	8	8	8	5,5,5	8,8,8	8,5	No
KWS010	VAN97W-386//VA99W-164	23	Murche	12-13	25	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
AR00255-16-1	Roane/LA9070G45-3-3-1	24	Mason	12-13	26	8	8	8	8	8	2,3,3	3,3,4	3,3,3	High
AR01209-2-1	AGS2000/PI531193(JGI)	25	Mason	12-13	27	8	8	8	8	8	8,8,8	8,8,8	3,3,8	No

STRIPE RUST

Chen

Cultivar/ Designation	Pedigree	Entry No.	Contributor	1st year in nurs.	2013 PLOT	Infection type produced by PST races ^a									Possible HTAP ^c resistance
						Seedling Test ^b (4 - 20 C)					Adult-plant Test ^b (10 - 30 C)				
						PSTv-4	PSTv-14	PSTv-37	PSTv-40	PSTv-51	PSTv-14	PSTv-37	PSTv-40		
KY03C-1237-39	P25R18/KY92C-0010-17//KY96C-0767-1	26	Van Sanford	12-13	28	8	8	8	8	8	4,8,8	8,8,8	3,3,8	No	
LCS10516	MO1-4377/96229-3E39	27	Obert	12-13	29	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No	
LCS19228	T814/L900819//VA98W-591	28	Obert	12-13	30	8	8	8	8	8	3,5,5	5,5,5	4,5,5	Moderate	
LCS19229	VA98W-593//L900819/C916	29	Obert	12-13	31	8	5	8	2,5	5	2,2,3	2,3,4	2,2,3	High	
GA04121-11E26	GA98302/SC996284	30	Johnson	12-13	32	8	8	8	8	8	2,2,2	2,8,8	2,2,2	No	
GA04434-11E44	GA961565-2E46/AGS2485//SS8641	31	Johnson	12-13	33	8	8	8	8	2,5	2,2,2	8,8,8	2,2,2	No	
P04606RA1-1-7-1-6	Truman/961341A3-1-4-6	32	Ohm	12-13	34	8	8	8	8	8	2,2,3	8,8,8	3,3,3	No	
P05247A1-7-3-121	99840C4-8/03726A1//99840C-8-3-6-1/3/9979	33	Ohm	12-13	35	8	8	8	8	8	2,2,2	2,2,2	2,2,2	High	
P05222A1-1-2-7	99840C4-8/5/99593RA1-7/6/97395C1-1-4/R3	34	Ohm	12-13	36	8	8	8	8	8	2 2 8	8,8,8	2,2,2	No	
DANW1006	25R23/TW106-048	35	Etienne	12-13	37	8	8	8	8	8	8 8 8	8,8,8	8,8,8	No	
DANW1008	TW165-065/25R23	36	Etienne	12-13	38	8	8	8	8	8	88 8	8,8,8	8,8,8	No	
MD04W249-11-7	MV8-29/25R42	37	Costa	12-13	39	8	8	8	2,8	8	3 5 5	8,8,8	2,2,2	No	
MD04W249-11-12	MV8-29/25R42	38	Costa	12-13	40	8	8	8	8	8	3 3 5	3,5,6	2,8,8	No	
MD04W249-11-16	MV8-29/25R42	39	Costa	12-13	41	8	8	8	8	8	3 5 6	3,3,3	2,2,2	Low	
PS 279	(SUSCEPTIBLE CHECK)				42	8	8	8	8	8	8 8 8	8,8,8	8,8,8	No	

^a Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally

IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT and the number of plants for each IT is indicated in "()". For adult-plant tests, if the flag leaf has a IT different from the leaf below, the ITs are separated by "/" with the flag leaf IT first.

Virulence/avirulence formulae (Yr genes) of the tested races:

PSTv-4: **1,6,9,17,27,SP,Tye/5,7,8,10,15,24,32,43,44,Tr1,Exp2**

PSTv-14: **1,6,7,8,9,17,27,43,44,Tr1,Exp2,Tye/5,10,15,24,32,SP**

PSTv-37: **6,7,8,9,17,27,43,44,Tr1,Exp2/1,5,10,15,24,32,SP,Tye**

PSTv-40: **6,7,8,9,10,24,27,32,43,44,Tr1,Exp2/1,5,15,17,SP,Tye**

PSTv-51: **1,6,7,8,9,10,17,24,27,32,43,44,SP,Tr1,Exp2,Tye/5,15**

^b The seedling tests were conducted in October to December 2011 for each race without replications. For adult-plant tests, seeds were planted in late November and seedlings of about 3-5 cm were vernalized at 2-4 °C for 6 to 9 weeks and then transplanted into big pots and grown in the greenhouse (10 to 25 °C diurnal temperature cycle, 16h light) from January to March. Plants at boot to flowering stages were inoculated (Jan to March 2012) with a mixture of urediniospores of a particular race with talc powdery at about 1:20 ratio, incubated for 20 to 24 h in a dew chamber (dark, 10 °C) and then grown in a greenhouse growth chamber at the 10-30°C diurnal temperature cycle with 16 h light. IT was recorded for each plant 18 to 20 days after inoculation. The three reps for each race test were done in different time periods.

^c Entries with a high IT in the seedling low-temperature test but with a low IT in the adult-plant tests under high temperatures have possibly high-temperature adult-plant (HTAP) resistance.

SEPTORIA

		Brownstown	Columbia		Nairn
		IL	MO		ON
		Kolb	McKendry		Etienne
		tritici 0-9	leaf blotch % canopy	glume blotch % canopy	tritici 0-9
1	Branson	8.0	18	5	4.0
2	Bess	6.0	28	8	6.3
3	Shirley	5.3	16	8	3.3
4	MO080104	7.0	39	2	4.7
5	NC08-23324	6.0	49	2	5.7
6	KY03C-1237-32	7.7	32	17	5.0
7	KY03C-1002-02	7.3	28	2	5.3
8	VA08MAS-369	5.7	18	3	3.3
9	VA09W-73	5.0	21	5	3.5
10	VA10W-21	6.3	28	3	3.8
11	DANW1003	5.3	29	3	5.7
12	OH08-180-48	4.0	16	0	3.5
13	ARS07-0525	6.0	25	8	6.2
14	NC08-140	6.0	22	3	3.8
15	NC09-20768	5.0	44	5	7.2
16	OH08-172-42	4.7	18	3	4.0
17	OH07-264-35	3.0	33	8	4.8
18	IL07-4415	8.0	26	5	7.8
19	IL07-19334	4.0	19	2	4.5
20	IL07-20728	6.3	31	5	6.3
21	KWS008	6.7	20	2	5.7
22	KWS009	5.7	32	5	3.7
23	KWS010	6.3	20	5	3.8
24	AR00255-16-1	6.7	54	23	6.3
25	AR01209-2-1	6.7	23	12	5.8
26	KY03C-1237-39	8.0	20	5	6.3
27	LCS10516	6.3	28	2	6.2
28	LCS19228	7.3	32	3	6.0
29	LCS19229	6.0	29	5	3.0
30	GA04121-11E26	4.3	23	0	7.5
31	GA04434-11E44	5.3	27	7	4.2
32	P04606RA1-1-7-1-6-3	4.3	25	5	5.5
33	P05247A1-7-3-121	3.0	22	7	4.7
34	P05222A1-1-2-7	6.3	17	13	5.2
35	DANW1006	6.0	34	2	7.7
36	DANW1008	7.0	24	3	3.8
37	MD04W249-11-7	6.7	35	2	5.7
38	MD04W249-11-12	6.7	29	2	6.7
39	MD04W249-11-16	8.7	42	3	6.2
LOCATION MEANS		6.0	27.6	5.2	5.2

SEPTORIA

	Warsaw VA Griffey nodorum 0-9	Oconto WI Murche tritici 0-9	
1	Branson	1.5	2.5
2	Bess	1.5	3.0
3	Shirley	0.5	2.0
4	MO080104	2.0	6.0
5	NC08-23324	1.0	1.0
6	KY03C-1237-32	1.5	3.0
7	KY03C-1002-02	1.0	3.0
8	VA08MAS-369	1.0	2.0
9	VA09W-73	0.5	1.5
10	VA10W-21	1.0	3.5
11	DANW1003	1.0	3.5
12	OH08-180-48	0.0	4.0
13	ARS07-0525	1.0	2.0
14	NC08-140	1.0	1.5
15	NC09-20768	1.0	3.0
16	OH08-172-42	1.0	3.0
17	OH07-264-35	1.0	5.0
18	IL07-4415	1.5	5.5
19	IL07-19334	1.0	3.0
20	IL07-20728	1.0	6.0
21	KWS008	1.5	4.5
22	KWS009	1.0	3.0
23	KWS010	1.0	4.0
24	AR00255-16-1	1.5	6.0
25	AR01209-2-1	2.0	3.0
26	KY03C-1237-39	1.0	5.5
27	LCS10516	1.0	2.5
28	LCS19228	1.0	3.5
29	LCS19229	1.0	2.0
30	GA04121-11E26	0.5	1.0
31	GA04434-11E44	0.5	1.0
32	P04606RA1-1-7-1-6-3	1.0	4.0
33	P05247A1-7-3-121	1.5	3.5
34	P05222A1-1-2-7	2.0	3.0
35	DANW1006	1.0	5.0
36	DANW1008	1.0	5.0
37	MD04W249-11-7	1.0	1.5
38	MD04W249-11-12	1.0	2.0
39	MD04W249-11-16	1.0	2.5
LOCATION MEANS		1.1	3.2

EASTERN SEPTORIA NURSERY

Raleigh / Kinston
NC

Cowger

		Leaves	Glumes
1	Branson	4.3	1.0
2	Bess	4.7	3.0
3	Shirley	4.0	2.3
4	MO080104	4.0	2.3
5	NC08-23324	4.3	1.3
6	KY03C-1237-32	7.5	5.0
7	KY03C-1002-02	6.5	4.3
8	VA08MAS-369	5.0	4.0
9	VA09W-73	5.7	2.7
10	VA10W-21	4.7	3.3
11	DANW1003	3.0	0.7
12	OH08-180-48	4.0	1.7
13	ARS07-0525	3.7	2.0
14	NC08-140	4.7	2.0
15	NC09-20768	3.3	1.0
16	OH08-172-42	4.7	3.3
17	OH07-264-35	2.7	4.7
18	IL07-4415	3.5	3.3
19	IL07-19334	3.3	1.3
20	IL07-20728	5.0	1.7
21	KWS008	6.0	4.3
22	KWS009	5.0	1.7
23	KWS010	4.0	2.7
24	AR00255-16-1	4.7	2.3
25	AR01209-2-1	4.3	1.7
26	KY03C-1237-39	6.5	4.7
27	LCS10516	4.7	3.7
28	LCS19228	5.0	3.7
29	LCS19229	4.0	2.0
30	GA04121-11E26	5.0	2.0
31	GA04434-11E44	4.0	1.0
32	P04606RA1-1-7-1-6-3	3.0	3.0
33	P05247A1-7-3-121	3.0	3.7
34	P05222A1-1-2-7	5.7	7.3
35	DANW1006	3.0	1.0
36	DANW1008	3.0	1.7
37	MD04W249-11-7	6.5	3.0
38	MD04W249-11-12	7.5	3.0
39	MD04W249-11-16	6.0	3.0
	AGS 2000	6.7	2.0
	AGS 2060	4.0	1.3
	Neuse	3.7	0.7
	USG 3209	5.0	3.0
	Shirley	2.7	2.0
	Pembroke	6.5	5.0
	Jensen	3.7	3.0
	Kaskaskia	5.7	2.7
	Malabar	3.3	2.3

FUSARIUM HEAD BLIGHT (SCAB)

		Harrisburg	Lafayette		Lafayette	Lexington
		IL	IN	IN	KY	
		Murche	Obert	Moreno	Van Sanford	
		0-9	Infected spikes 0-9	Within spike 0-9		0-9
1	Branson	3.7	3.0	3.0	3	4.0
2	Bess	1.0	1.5	2.0	1	1.0
3	Shirley	5.3	3.5	4.5	4	4.0
4	MO080104	1.3	1.5	2.5	1	1.0
5	NC08-23324	2.7	1.0	1.5	2	2.0
6	KY03C-1237-32	2.0	1.5	2.0	1	2.0
7	KY03C-1002-02	2.7	2.5	3.5	1	1.0
8	VA08MAS-369	5.0	3.5	4.0	4	2.5
9	VA09W-73	3.7	1.5	2.5	3	2.0
10	VA10W-21	1.7	2.5	5.0	2	4.0
11	DANW1003	2.0	3.5	3.5	3	0.5
12	OH08-180-48	4.0	1.5	4.0	3	2.0
13	ARS07-0525	5.3	3.0	3.5	2	1.5
14	NC08-140	5.3	2.5	3.5	4	5.0
15	NC09-20768	1.7	3.0	3.5	4	3.5
16	OH08-172-42	2.7	2.5	3.5	2	2.0
17	OH07-264-35	3.3	2.0	2.0	3	2.5
18	IL07-4415	2.0	1.5	2.0	1	0.5
19	IL07-19334	1.7	3.0	4.5	1	1.0
20	IL07-20728	1.3	1.5	2.0	2	1.5
21	KWS008	5.0	4.0	4.5	6	4.0
22	KWS009	3.3	1.5	3.0	4	6.0
23	KWS010	3.3	2.5	2.5	3	1.0
24	AR00255-16-1	3.3	2.0	2.5	5	4.0
25	AR01209-2-1	5.7	3.0	4.0	4	5.0
26	KY03C-1237-39	2.0	2.0	3.5	2	3.5
27	LCS10516	1.7	2.0	4.5	4	3.5
28	LCS19228	2.7	2.0	2.5	3	2.0
29	LCS19229	2.0	2.0	3.0	2	2.0
30	GA04121-11E26	4.7	1.0	2.0	5	4.0
31	GA04434-11E44	6.3	5.5	8.0	5	4.0
32	P04606RA1-1-7-1-6-3	1.0	2.5	3.0	1	0.5
33	P05247A1-7-3-121	4.7	1.5	2.5	3	2.0
34	P05222A1-1-2-7	4.3	2.5	2.5	1	1.0
35	DANW1006	2.3	1.0	3.0	3	1.0
36	DANW1008	3.7	3.0	2.5	4	2.0
37	MD04W249-11-7	2.0	3.0	3.5	1	2.0
38	MD04W249-11-12	2.0	2.0	2.0	1	3.0
39	MD04W249-11-16	1.3	2.0	1.5	2	3.0
LOCATION MEANS		3.1	2.3	3.2	2.7	2.5

FUSARIUM HEAD BLIGHT (SCAB)

		Webberville		
		MI		
		Olson		
		incidence	severity	index
		%	%	
1	Branson	12	47	13
2	Bess	1	11	0
3	Shirley	77	49	30
4	MO080104	35	35	15
5	NC08-23324	38	34	13
6	KY03C-1237-32	35	40	16
7	KY03C-1002-02	21	22	0
8	VA08MAS-369	53	58	28
9	VA09W-73	37	26	9
10	VA10W-21	16	60	17
11	DANW1003	3	63	0
12	OH08-180-48	40	57	28
13	ARS07-0525	11	26	0
14	NC08-140	94	66	60
15	NC09-20768	33	40	15
16	OH08-172-42	33	64	24
17	OH07-264-35	48	48	30
18	IL07-4415	17	49	8
19	IL07-19334	8	11	0
20	IL07-20728	88	31	35
21	KWS008	34	32	7
22	KWS009	55	65	40
23	KWS010	11	55	11
24	AR00255-16-1	15	57	16
25	AR01209-2-1	50	88	39
26	KY03C-1237-39	45	39	16
27	LCS10516	22	65	19
28	LCS19228	0	56	1
29	LCS19229	33	26	5
30	GA04121-11E26	40	90	28
31	GA04434-11E44	42	70	32
32	P04606RA1-1-7-1-6-3	28	14	0
33	P05247A1-7-3-121	24	67	17
34	P05222A1-1-2-7	18	46	11
35	DANW1006	5	43	5
36	DANW1008	42	46	20
37	MD04W249-11-7	70	36	34
38	MD04W249-11-12	52	42	24
39	MD04W249-11-16	52	70	27
LOCATION MEANS		34.2	47.3	17.7

FUSARIUM HEAD BLIGHT (SCAB)

		Columbia MO			Nairn ON	
		Field INC	Field SEV	Field FHBI	Etienne	
					%	%
1	Branson	75	16	12	0.7	4.6
2	Bess	70	8	6	0.0	4.0
3	Shirley	90	27	25	2.2	5.0
4	MO080104	60	9	5	0.2	4.5
5	NC08-23324	75	11	8	0.3	4.6
6	KY03C-1237-32	65	11	7	0.3	3.6
7	KY03C-1002-02	90	16	15	0.4	4.5
8	VA08MAS-369	70	17	12	1.0	3.6
9	VA09W-73	75	15	11	0.3	4.2
10	VA10W-21	80	13	10	0.5	5.3
11	DANW1003	80	34	27	1.0	5.5
12	OH08-180-48	95	32	30	0.6	4.3
13	ARS07-0525	95	28	26	1.0	3.4
14	NC08-140	80	47	38	1.8	5.3
15	NC09-20768	65	23	15	0.8	3.4
16	OH08-172-42	80	19	16	0.5	3.6
17	OH07-264-35	90	20	18	1.8	4.3
18	IL07-4415	60	9	6	0.1	5.9
19	IL07-19334	60	13	8	0.0	3.2
20	IL07-20728	75	19	14	0.1	4.3
21	KWS008	80	35	28	1.1	4.6
22	KWS009	60	10	6	0.7	4.8
23	KWS010	80	18	15	0.5	3.7
24	AR00255-16-1	80	13	11	1.4	8.0
25	AR01209-2-1	90	20	18	1.5	5.5
26	KY03C-1237-39	75	16	12	0.9	5.3
27	LCS10516	85	16	14	1.2	5.9
28	LCS19228	70	20	14	0.4	5.6
29	LCS19229	75	13	10	0.1	3.4
30	GA04121-11E26	70	20	14	2.2	5.5
31	GA04434-11E44	100	33	33	1.2	4.6
32	P04606RA1-1-7-1-6-3	90	24	21	0.3	5.0
33	P05247A1-7-3-121	80	19	15	1.4	5.3
34	P05222A1-1-2-7	80	18	14	0.8	5.5
35	DANW1006	100	24	24	2.0	3.4
36	DANW1008	90	36	33	2.1	3.4
37	MD04W249-11-7	70	13	9	0.4	2.9
38	MD04W249-11-12	70	11	8	0.7	3.8
39	MD04W249-11-16	90	20	18	1.0	5.3
LOCATION MEANS		78.6	19.7	16.0	0.9	4.6

FUSARIUM HEAD BLIGHT (SCAB)

Warsaw
VA

Griffey

		index	white heads
		%	%
1	Branson	1.0	5
2	Bess	1.0	4
3	Shirley	1.0	13
4	MO080104	0.0	4
5	NC08-23324	0.5	1
6	KY03C-1237-32	0.5	1
7	KY03C-1002-02	1.0	2
8	VA08MAS-369	1.0	10
9	VA09W-73	1.0	4
10	VA10W-21	1.0	8
11	DANW1003	0.5	2
12	OH08-180-48	0.0	2
13	ARS07-0525	0.5	2
14	NC08-140	0.5	8
15	NC09-20768	1.0	5
16	OH08-172-42	0.0	0
17	OH07-264-35	1.0	5
18	IL07-4415	0.5	2
19	IL07-19334	0.0	0
20	IL07-20728	0.0	0
21	KWS008	1.0	5
22	KWS009	1.0	8
23	KWS010	0.0	3
24	AR00255-16-1	1.0	5
25	AR01209-2-1	2.0	8
26	KY03C-1237-39	0.5	4
27	LCS10516	1.0	4
28	LCS19228	1.0	4
29	LCS19229	0.5	1
30	GA04121-11E26	1.0	8
31	GA04434-11E44	1.0	13
32	P04606RA1-1-7-1-6-3	0.0	0
33	P05247A1-7-3-121	0.5	2
34	P05222A1-1-2-7	0.5	2
35	DANW1006	0.0	1
36	DANW1008	1.0	8
37	MD04W249-11-7	0.0	2
38	MD04W249-11-12	1.0	4
39	MD04W249-11-16	1.0	8
LOCATION MEANS		0.7	4.1

POWDERY MILDEW

	Griffin GA Johnson 0-9	Lafayette IN Moreno	Blacksburg VA Griffey 0-9	Oconto WI Murche 0-9
1 Branson	0	1	0.0	0.9
2 Bess	2	5	3.0	5.1
3 Shirley	0	1	0.0	0.7
4 MO080104	1	3	2.5	1.1
5 NC08-23324	0	1	2.0	0.9
6 KY03C-1237-32	0	1	1.0	0.6
7 KY03C-1002-02	0	3	3.5	0.8
8 VA08MAS-369	1	1	0.5	1.0
9 VA09W-73	1		0.5	0.9
10 VA10W-21	4	1	0.5	0.9
11 DANW1003	0	5	0.0	0.7
12 OH08-180-48	2	5	2.5	4.4
13 ARS07-0525	1	3	1.0	1.2
14 NC08-140	1	1	0.5	2.0
15 NC09-20768	1	1	0.0	1.1
16 OH08-172-42	0	7	5.0	2.6
17 OH07-264-35	3	3	1.0	0.8
18 IL07-4415	4	9	7.0	8.5
19 IL07-19334	0	5	1.0	4.5
20 IL07-20728	2	7	1.0	6.7
21 KWS008	2	5	2.0	3.5
22 KWS009	1	3	0.5	3.3
23 KWS010	2	1	0.5	1.3
24 AR00255-16-1	3	9	3.0	8.8
25 AR01209-2-1	2	5	3.0	4.2
26 KY03C-1237-39	1	5	3.0	3.3
27 LCS10516	0	1	1.5	2.8
28 LCS19228	0	1	1.0	2.2
29 LCS19229	0		0.5	1.6
30 GA04121-11E26	1		1.0	2.6
31 GA04434-11E44	0	1	0.0	0.8
32 P04606RA1-1-7-1-6-3	2	3	2.0	5.5
33 P05247A1-7-3-121	0	3	0.5	0.5
34 P05222A1-1-2-7	2	1	2.5	1.1
35 DANW1006	0	3	1.0	2.9
36 DANW1008	2	3	0.0	2.5
37 MD04W249-11-7	0	1	1.5	1.0
38 MD04W249-11-12	0	1	0.0	1.5
39 MD04W249-11-16	0	1	0.0	1.0
LOCATION MEANS	1.1	3.1	1.4	2.4

VIRUSES

	Winfield	Clarksville	Blacksburg	
	KS	MD	VA	
	Perry	Costa	Griffey	
	SBMV	SBWMV	BYDV	
	0-9	0-9	0-9	
1	Branson	1	6.0	1.0
2	Bess	4	0.0	1.5
3	Shirley	2	0.0	1.0
4	MO080104	2	0.0	2.0
5	NC08-23324	1	0.0	2.5
6	KY03C-1237-32	1	0.0	1.0
7	KY03C-1002-02	1	0.0	3.5
8	VA08MAS-369	1	0.0	2.5
9	VA09W-73	8	1.0	1.0
10	VA10W-21	1	0.0	1.0
11	DANW1003	7	0.0	2.0
12	OH08-180-48	1	0.0	2.0
13	ARS07-0525	9	0.0	1.5
14	NC08-140	1	4.0	1.0
15	NC09-20768	1	3.0	1.0
16	OH08-172-42	6	0.0	1.5
17	OH07-264-35	6	0.0	1.5
18	IL07-4415	1	0.0	2.5
19	IL07-19334	7	0.0	1.0
20	IL07-20728	1	0.0	1.5
21	KWS008	1	0.0	1.0
22	KWS009	2	4.0	1.5
23	KWS010	1	4.5	1.5
24	AR00255-16-1	2	0.0	1.0
25	AR01209-2-1	3	0.0	2.0
26	KY03C-1237-39	1	0.0	1.5
27	LCS10516	5	0.0	1.0
28	LCS19228	1	0.0	2.0
29	LCS19229	1	0.0	1.0
30	GA04121-11E26	9	0.0	1.5
31	GA04434-11E44	2	4.0	1.0
32	P04606RA1-1-7-1-6-3	1	0.0	1.5
33	P05247A1-7-3-121	8	0.0	0.5
34	P05222A1-1-2-7	1	0.0	1.0
35	DANW1006	1	0.0	2.5
36	DANW1008	1	0.0	1.0
37	MD04W249-11-7	1	0.0	1.0
38	MD04W249-11-12	1	0.0	1.0
39	MD04W249-11-16	1	0.0	1.0
LOCATION MEANS	2.7	0.7	1.5	

HESSIAN FLY

W Lafayette

IN

Cambron

		BIO B	BIO C	BIO D	BIO O	BIO L
		R-S	R-S	R-S	R-S	R-S
1	Branson	17-2	0-17	0-16	14-3	0-18
2	Bess	0-19	0-18	0-18	0-19	0-24
3	Shirley	0-18	15-0	0-16	0-17	0-17
4	MO080104	15-3	19-1	0-20	0-18	0-18
5	NC08-23324	0-14	0-19	0-17	0-18	0-20
6	KY03C-1237-32	0-19	0-18	0-19	12-5	0-20
7	KY03C-1002-02	0-20	0-20	0-17	0-18	0-18
8	VA08MAS-369	0-24	0-19	0-18	16-1	0-17
9	VA09W-73	0-18	0-22	0-17	0-19	0-17
10	VA10W-21	0-20	0-18	0-17	0-21	0-19
11	DANW1003	0-23	0-17	0-16	0-18	0-17
12	OH08-180-48	15-2	0-19	0-17	0-19	0-22
13	ARS07-0525	19-0	20-0	16-0	18-0	20-0
14	NC08-140	0-16	11-5	8-9	0-20	0-17
15	NC09-20768	0-19	0-16	0-16	11-3	0-16
16	OH08-172-42	0-19	0-19	0-22	0-20	0-20
17	OH07-264-35	0-17	0-16	0-19	0-21	0-17
18	IL07-4415	1-17	0-18	0-16	0-17	0-14
19	IL07-19334	15-2	0-20	0-17	16-2	0-21
20	IL07-20728	0-21	0-22	0-19	0-18	0-22
21	KWS008	8-9	0-19	0-16	0-22	0-17
22	KWS009	20-1	0-21	0-17	18-0	0-18
23	KWS010	0-17	0-16	0-15	0-18	0-13
24	AR00255-16-1	16-7	19-0	0-17	18-0	0-22
25	AR01209-2-1	0-22	0-18	0-19	0-18	0-22
26	KY03C-1237-39	0-23	0-17	0-17	0-20	0-20
27	LCS10516	0-19	0-13	0-19	0-20	0-19
28	LCS19228	14-3	0-18	0-17	17-0	0-17
29	LCS19229	0-20	0-20	0-19	17-3	0-19
30	GA04121-11E26	19-0	0-14	15-1	20-0	21-0
31	GA04434-11E44	0-18	0-18	0-17	15-3	0-19
32	P04606RA1-1-7-1-6-3	2-16	15-4	11-6	0-17	0-17
33	P05247A1-7-3-121	0-21	0-21	0-18	0-22	0-21
34	P05222A1-1-2-7	0-17	0-14	0-19	0-18	0-19
35	DANW1006	0-20	0-16	0-16	18-1	0-19
36	DANW1008	0-18	0-20	0-17	0-16	0-20
37	MD04W249-11-7	3-13	0-16	0-21	0-14	0-16
38	MD04W249-11-12	19-0	0-17	0-16	0-17	0-16
39	MD04W249-11-16	0-20	0-20	0-16	0-15	0-17

ACID SOIL TOLERANCE

		Enid OK Carver		
		AST1	AST2	AST3
1	Branson	2	2	2
2	Bess	1	1	1
3	Shirley	1	1	1
4	MO080104	1	1	2
5	NC08-23324	0	1	1
6	KY03C-1237-32	1	0	1
7	KY03C-1002-02	1	2	2
8	VA08MAS-369	0	1	2
9	VA09W-73	1	0	1
10	VA10W-21	1	0	2
11	DANW1003	1	3	1
12	OH08-180-48	2	3	2
13	ARS07-0525	1	2	4
14	NC08-140	1	1	3
15	NC09-20768	1	1	3
16	OH08-172-42	1	2	3
17	OH07-264-35	3	4	5
18	IL07-4415	1	1	2
19	IL07-19334	2	3	3
20	IL07-20728	2	4	4
21	KWS008	1	1	1
22	KWS009	0	0	1
23	KWS010	3	3	4
24	AR00255-16-1	3	3	1
25	AR01209-2-1	1	1	2
26	KY03C-1237-39	2	3	3
27	LCS10516	0	0	1
28	LCS19228	2	2	2
29	LCS19229	2	1	2
30	GA04121-11E26	1	1	2
31	GA04434-11E44	0	1	2
32	P04606RA1-1-7-1-6-3	1	2	3
33	P05247A1-7-3-121	2	2	2
34	P05222A1-1-2-7	3	3	3
35	DANW1006	3	4	3
36	DANW1008	2	3	2
37	MD04W249-11-7	1	1	1
38	MD04W249-11-12	1	1	2
39	MD04W249-11-16	1	1	2
MEANS		1.4	1.7	2.2
GROWTH STAGE / DATE		3.0 / March 4	5.0-6.0 / March 28	10.0+ / April 27

KERNEL WEIGHT

		Nairn
		ON
		Etienne
		tkw grams
1	Branson	34.5
2	Bess	34.6
3	Shirley	32.6
4	MO080104	35.8
5	NC08-23324	36.6
6	KY03C-1237-32	33.3
7	KY03C-1002-02	33.7
8	VA08MAS-369	33.4
9	VA09W-73	37.1
10	VA10W-21	37.4
11	DANW1003	39.2
12	OH08-180-48	29.9
13	ARS07-0525	32.4
14	NC08-140	34.4
15	NC09-20768	25.3
16	OH08-172-42	32.9
17	OH07-264-35	33.4
18	IL07-4415	39.2
19	IL07-19334	33.1
20	IL07-20728	33.4
21	KWS008	33.9
22	KWS009	34.1
23	KWS010	39.8
24	AR00255-16-1	33.8
25	AR01209-2-1	32.1
26	KY03C-1237-39	37.0
27	LCS10516	39.7
28	LCS19228	33.1
29	LCS19229	34.6
30	GA04121-11E26	32.5
31	GA04434-11E44	33.1
32	P04606RA1-1-7-1-6-3	38.5
33	P05247A1-7-3-121	33.5
34	P05222A1-1-2-7	30.0
35	DANW1006	37.9
36	DANW1008	36.5
37	MD04W249-11-7	34.9
38	MD04W249-11-12	40.1
39	MD04W249-11-16	36.8
LOCATION MEANS		34.7