UNITED STATES DEPARTMENT OF AGRICULTURE
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State Agricultural Experiment Stations, Cooperating

2010 - 2011

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.

USDA-ARS
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October 2011

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2010-2011 UNIFORM EASTERN SOFT RED WINTER WHEAT NURSERY
LIST OF ENTRIES AND PEDIGREES

Entry No.	Cultivar/ Designation	Pedigree	Contributor	1st Year in Nursery
1	INW0411	96204A1-12//Goldfield/92823A1-11 (formerly P97397E1-11-2-4-1-1)	Check	03-04
2	Branson	Pio2737W/891-4584A (Pike/FL302) (formerly M00-3701)	Check	03-04
3	Bess	MO11769/Madison (formerly MO981020)	Check	02-03
4	Shirley	VA94-52-25 /Coker 9835//VA96-54-234 (formerly VA03W-409)	Check	05-06
5	T171	P92145EB…./T116	Wilson	09-10
6	MO 080104	L910097/MO 92-599	McKendry	09-10
7	OH05-200-74	OH629/Hopewell	Sneller	09-10
8	IL04-24668	IL98-13404/IL97-3578	Kolb	09-10
9	IL05-4236	Truman/KY93C-1238-17-1	Kolb	09-10
10	TN902	ILL F322W/BL940582//(Card/Mass)/T106	West	09-10
11	NC05-19896	Burr/NC96BGTA6 sib//Natchez	Murphy	09-10
12	X08-18A3	Pio25R49/INW0102	Cisar	10-11
13	X08-39D	Roane/Pio25R37	Cisar	10-11
14	G09408	VA91-54-219/Freedom	Peterson	10-11
15	G09419	T814/L900819	Peterson	10-11
16	G09607	Pontiac/Wakefield	Peterson	10-11
17	IL06-14262	IL00-8530/IL97-1828	Kolb	10-11
18	OH06-150-57	P92201D5-2-29/OH708	Sneller	10-11
19	OH06-180-57	KY90C-042-37-1/OH687	Sneller	10-11
20	T177	P92145EB…/T116	Wilson	10-11
21	T178	P92145EB…/T116	Wilson	10-11
22	GA021087-9LE33	Pio26R61/AGS2010	Johnson	10-11
23	GA011446-9LE35	GA941365-E23/GA941238-E24	Johnson	10-11
24	MH07-7483	M95-2994-1/Pio25R57	Fogleman	10-11
25	MH07-7474	M97-1048/Elkhart	Fogleman	10-11
26	P04702A1-18	INW0316*2/INW0301	Ohm	10-11
27	P0537A1-12	97397/3/2754//INW0412/98134W	Ohm	10-11
28	P06403A1-4	INW0411/992059/3/96169//981129/981312	Ohm	10-11
29	KY02C-3005-25	Pio25R18/McCormick	Van Sanford	10-11
30	KY02C-3004-07	Pio25R18/Tribute	Van Sanford	10-11
31	VA05W-251	VA98W-130//VA96W-348/Pio26R61	Griffey	10-11
32	VA08W-176	KY96C-0079-5/McCormick	Griffey	10-11
33	VA08W-294	SS520/VA99W-188//Tribute	Griffey	10-11
34	TN1102	KY90C-292-4-1/TX91-57//(Saluda/Becker)/VA94W-158	West	10-11
35	NC07-23880	Pio26R24/VA97W-375//NC96-13965	Murphy	10-11
36	MSU Line E5011	Caledonia/NY88024-117	Lewis	10-11
37	MSU Line E5024	D6234/Pio25W33	Lewis	10-11
38	MSU Line E6012	Caledonia/Pio25W33	Lewis	10-11

LOCATION NOTES

Bay, Arkansas

Cooperators:	June Hancock, David Hill, Richard Gray Syngenta Seeds
Planted:	October 7, 2010
Harvested:	June 8, 2011

Stuttgart, Arkansas

Cooperators:	Esten Mason University of Arkansas
Notes:	Nursery was severely damaged from glyphosate drift. Yields were reduced by as much as 75%.

Griffin, Georgia

Cooperators:	Jerry Johnson, Dan Bland, James Buck, David Buntin University of Georgia
Planted:	November 3, 2010
Harvested:	May 26, 2011
Fertilizer:	80 N; 400 of 5-10-15
Notes:	Low test weights as a result of early stripe rust infection or high moisture at harvest.

Brownstown, Illinois

Cooperators:	Fred Kolb, Norman Smith, Eric Brucker University of Illinois
Planted:	October 4, 2010
Harvested:	July 1, 2011
Fertilizer:	40 N preplant, 50 N topdress
Notes:	Very dry fall, but stands were good. Heavy rain delayed harvest for a few days.

Urbana, Illinois

Cooperators:	Fred Kolb, Norman Brown, Eric Brucker University of Illinois
Planted:	September 27, 2010
Harvested:	July 5, 2011
Fertilizer:	40 N preplant, 50 N topdress
Notes:	Very dry fall, but stands were very good. Scab data are from inoculated, misted nursery. ISK index = 0.3 * incidence + 0.3 * severity + 0.4 * FDK. DON data courtesy of Yanhong Dong, UMn. BYDV data are from PAV-Il inoculated hills. BYDV % stunting = [(control hill ht – inoculated hill ht) / control hill ht] * 100. Rust data are from two reps of 3’ rows planted at DeKalb, IL.

Battle Ground, Indiana

Cooperators:	Don Obert, Sam Brown Limagrain Cereal Seeds
Planted:	October 8, 2010
Harvested:	July 7, 2011
Fertilizer:	24-78-63 plowdown with 19.4# S and 3# Zn on 9/21; 11# ESN slow release N fall applied; 40# urea and 40$ ESN on 3/18.
Notes:	Amazing fall emergence for how dry we were. Uniform emergence and good plot establishment. Record rains in April and May; 1-inch on July 1 and 5-inches on July 2. We experienced intense disease pressure. We missed Fusarium development.

Delphi, Indiana

Cooperators:	Barton Fogleman, Jennifer Vonderwell, Eugene Glover Syngenta Seeds
Planted:	October 15, 2010
Harvested:	July 7, 2011
Notes:	Single rep planted for observation. Very lush location. Cool wet spring with good display of leaf diseases. High yielding location in adjacent blocks where Quilt application protected flag leaves.

Lafayette, Indiana

Cooperators:	Ben Moreno, Justin Cooley WestBred
Planted:	October 1, 2010
Harvested:	June 30, 2011
Notes:	Stand: 1=100%, 9=0%. Plot stands in early spring. Thinner stands due to a combination of winter kill and uneven germination due to dry conditions at planting.

Mt Vernon, Indiana

Cooperators:	Barton Fogleman, Jennifer Vonderwell, Eugene Glover Syngenta Seeds
Planted:	October 18, 2010
Harvested:	June 24, 2011
Fertilizer:	98 N + 12 S on 3/25
Notes:	Location suffered from a lot of flooding in the spring, but this trial sat on high ground and did relatively well. Several stripe rust hot spots showed up, but no good uniformity for note-taking.

Tipton, Indiana

Cooperators:	Don Obert, Sam Brown Limagrain Cereal Seeds
Planted:	October 21, 2010
Harvested:	July 7, 2011
Fertilizer:	24-78-63 plowdown with 19.4# S and 3# Zn on 9/21; 11# ESN slow release N fall applied.

West Lafayette, Indiana

Cooperators:	Herb Ohm Purdue University
Planted:	September 29, 2010
Harvested:	June 29, 2011
Fertilizer:	35-90-0 prior to seeding (followed soybeans); 95-0-0 topdress on 2/23

Notes: Fall 2010 at Lafayette was very dry and emergence in this nursery was quite variable. We harvested two of the four replications in which emergence was fairly normal. Weather throughout the wheat growing season in 2011 consisted of frequent rain through harvest, although we managed to harvest our wheat nurseries fairly timely. Grain yields in this nursery were OK, but not outstanding. Experimental error was larger than usual. Straw score: 0=no lodging and stiff straw (determined as strong snap-back after pushing a handful of culms sideways) to 9=severe lodging of essentially the whole plot.

West Lafayette, Indiana

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

Winfield, Kansas

Cooperators:	Sid Perry
	WestBred
Planted:	September 23, 2010
Harvested:	June 10, 2011

Lexington, Kentucky

Cooperators:	Dave Van Sanford
	University of Kentucky
Planted:	October 12, 2010
Harvested:	July 1, 2011
Fertilizer:	P, K according to soil tests; 105 N in split applications
Notes:	Dry fall led to uneven stands which persisted throughout the season. Rainy harvest led to low test weights. Some foliar disease, but variable stands made it tough to rate, therefore no disease data presented.

Schochoh, Kentucky

Cooperators:	Dave Van Sanford
	University of Kentucky
Planted:	October 17, 2010
Harvested:	June 24, 2011
Fertilizer:	P, K according to soil tests; 105 N in split applications
Notes:	Rough year. Dry fall, poor stands going into winter. Cool May favored grain fill, but repeated rains delayed harvest and severely lowered test weights. Heavy leaf blotch and some FHB.

Clarksville, Maryland

Cooperators:	Jose Costa, Aaron Cooper
	University of Maryland
Planted:	October 11, 2010
Harvested:	June 28, 2011

Ingham County, Michigan

Cooperators:	Janet Lewis, Lee Siler, R. Laurenz, S. Hammer
	Michigan State University
Planted:	October 5, 2010
Harvested:	July 13, 2011
Fertilizer:	100 #19-19-19
Notes:	FHB nursery was located at East Lansing: The **FHB** nursery did not "behave" this year. We had bouts of very dry conditions, and some very wet conditions. We ended up with very little disease in earlier flowering materials, and a whole lot more as the days passed. Everything was rated at approx 21dpa. All three FHB scores (incidence, severity and index) were analyzed individually in SAS. The means adjustments, using JDF as a factor in the model, resulted in some of the FHB index scores being negative. Specifically, entries 29 and 30 (two KY lines) are showing up with negative FHB index values. Looking at their flowering time, they flowered a bit later than the rest of the nursery –

and had very good disease scores at that time (at a time when many things were much worse) – thus, comparatively, they are rated as being much better than most.

St. Paul, Minnesota

Cooperators:	Jim Kolmer, Yue Jin, Dave Long
	USDA-ARS, Cereal Disease Laboratory
Notes:	Leaf rust and stem rust multi-isolate seedling data.

Cleveland, Mississippi

Cooperators:	June Hancock, David Hill, Richard Gray
	Syngenta Seeds
Planted:	October 28, 2010
Harvested:	June 1, 2011

Columbia, Missouri

Cooperators:	Anne McKendry, David Tague
	University of Missouri
Planted:	October 7, 2010
Fertilizer:	120 N, 40-80 split applications
Notes:	Extreme rainfall during early grainfill probably reduced yield of earlier materials, although disease held off until it warmed up late. Golf ball-sized yail on July 3 reduced yield about 30% on average, some lines much worse than average. Lodging notes taken after the hail event.

Clay Center, Nebraska

Cooperators:	Stephen Baenziger
	University of Nebraska
Planted:	September 21, 2010
Harvested:	July 15, 2011
Notes:	Rain prior to harvest.

Ithaca, New York

Cooperators:	Mark Sorrells
	Cornell University
Planted:	September 23, 2010
Harvested:	July 15, 2011
Fertilizer:	200# 10-20-20; 120# amm nitrate topdress

Laurel Springs, North Carolina

Cooperators:	David Marshall
	USDA-ARS, Plant Science Research
Notes:	Adult-plant stripe rust data. 0-3 resistant; 4-6 intermediate; 7-9 susceptible.

Plymouth, North Carolina

Cooperators:	Paul Murphy
	North Carolina State University
Planted:	November 3, 2010
Harvested:	June 7, 2011
Fertilizer:	120 N
Notes:	Good growing season overall. Cold winter. Adequate moisture during entire season. Heavy leaf rust after heading. Powdery mildew notes taken at Lake Wheeler.

Raleigh, North Carolina

Cooperators: David Livingston, Tan Tuong
USDA-ARS, Plant Science Research

Notes: Controlled environment freeze test. Ten plants per entry were planted in cone-tainers (Livingston et al. 2005, Crop Science, 45:1545-1558). Two replicates. Plants were grown for 5 weeks at 13°C; 12 hours light/dark period; 400µmole light intensity, then hardened in chamber for 3 weeks at 3°C; 12 hours light/dark period; 350µmole light intensity. After 3 weeks, plants were subzero acclimated for 3 days @ -3°C in the dark, frozen @ 1°C/hour to -16°C for 3 hours, then thawed @ 2°C/hour to 3°C. Once removed from testing chambers, plants were watered once with 0.001% (v/v) Vitavax fungicide solution -And allowed to recover for 3 weeks at 13°C in cone-tainers; 12 hours light/dark period; 400µmole light. Plant survival ratings were rated for regrowth after 4 weeks by visually assessing leaves and roots. **0** = Completely dead; **1** = 1 survived (green) shoot **or** 1 primary root; **2** = 1 or 2 survived (green) shoots or 1 survived shoot **and** 1 or 2 primary roots; **3** = 1 or 2 survived shoots with developed roots (primary and secondary roots); **4** = 95% survived shoots with well developed roots; **5** = 100% survived with very little or no sign of freeze damage**.**

Raleigh, North Carolina

Cooperators: Christina Cowger
USDA-ARS, Plant Science Research

Notes: Eastern Septoria Nursery data. Screening was conducted at Kinston and Raleigh, NC. Each plot consisted of two standard headrows, and there were two replicates with entries randomly assigned to plots in each replicate. Plots were inoculated with wheat straw in December 2009. Disease data are from Kinston, NC, where plots were irrigated several times with an overhead linear system during the April drought. At Kinston, SNB pressure was excellent on leaves but only moderate on glumes, and no other diseases confounded the SNB ratings. The nursery was also grown and inoculated at Raleigh, and rated there for SNB and heading date. The Raleigh SNB data were inferior due to a heavy BYDV epidemic and lack of irrigation, and are not provided here. Heading date was not a significant source of variation in SNB symptoms on either leaves or glumes, so no adjustment for heading date was made to the disease data.

Raleigh, North Carolina

Cooperators: Gina Brown-Guedira
USDA-ARS, Eastern Regional Small Grains Genotyping Lab

Notes: Marker analysis.

Napoleon, Ohio

Cooperators: Barton Fogleman, Jennifer Vonderwell, Eugene Glover
Syngenta Seeds

Planted: October 6, 2010

Harvested: July 14, 2011

Notes: Good growing conditions this year. Pristine plots with very little leaf disease, although scab hit earlier materials particularly hard.

Wooster, Ohio

Cooperators: Clay Sneller
Ohio State University, OARDC

Wooster, Ohio

Cooperators:	Anthony Karcher
	USDA-ARS, Soft Wheat Quality Laboratory
Notes:	Milling and baking quality data.

Enid, Oklahoma

Cooperators:	Brett Carver, Melanie Bayles
	Oklahoma State University
Notes:	Acid soil tolerance data. Soil pH=4.0 to 4.3. Scale of 0 (most tolerant) to 5 (most susceptible) based on overall vigor, discoloration, and tiller production. Vegetative ratings may not associate with those taken on adult plants; adult-plant ratings not recorded due to difficulty in detecting genetic differences. Inherent differences in tillering capacity and growth habit (prostrate vs. erect) may have biased vegetative ratings.

Nairn, Ontario

Cooperators:	Mark Etienne
	Hyland Seeds
Planted:	November 12, 2010
Fertilizer:	200# 6-24-24 fall; 200# 46-0-0 in April
Notes:	Although planted late, winter survival was good. Very damp, cool spring followed by hot dry summer.

Knoxville, Tennessee

Cooperators:	Dennis West, David Kincer
	University of Tennessee
Planted:	October 19, 2010
Harvested:	June 14, 2011
Fertilizer:	90-30-30
Notes:	Severe hailstorm on April 27 (Julian 117). Lodging rated the following day. Estimate ¼ to 1/3 yield loss. CV and test weight are than expected.

Farmersville, Texas

Cooperators	Russell Sutton
	Texas AgriLife Research, TAMU

Blacksburg, Virginia

Cooperators:	Carl Griffey
	Virginia Tech
Planted:	October 6, 2010
Harvested:	June 29, 2011
Fertilizer:	30-50-60

Warsaw, Virginia

Cooperators:	Carl Griffey
	Virginia Tech
Planted:	October 19, 2010
Harvested:	June 10, 2011
Fertilizer:	30-60-60-5S

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

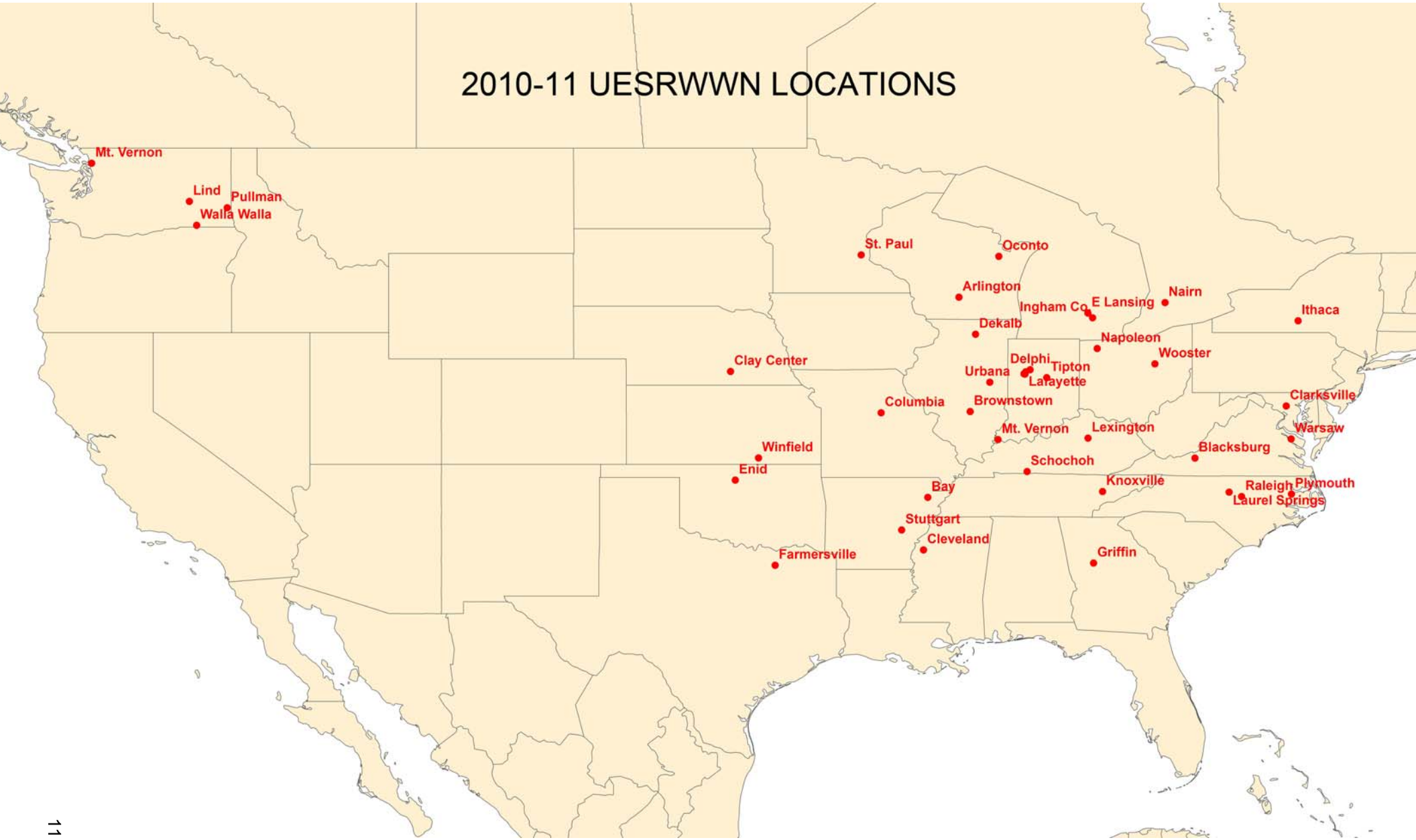
Cooperators:	Xianming Chen USDA-ARS, Wheat Genetics, Quality, Physiology, & Disease Research
Notes:	Adult stripe rust data. Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 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 may indicate that they have high-temperature, adult-plant (HTAP) resistance.

Arlington, Wisconsin

Cooperators:	Mark Martinka, Shawn Conley University of Wisconsin
Planted:	September 27, 2010
Harvested:	July 25, 2011
Fertilizer:	40#; previous crop soybeans
Notes:	Disease ratings courtesy of Gordon Cisar.

Oconto, Wisconsin

Cooperators:	Gordon Cisar, Jana Murche KWS Cereals USA
Planted:	September 28, 2010
Harvested:	August 1, 2011
Fertilizer:	Previous crop alfalfa; manure @ 6000 gal/acre
Notes:	Unusually late season. Stem rust observed on several entries, most notably E6012 (40S) and IL05-4236 (80S).


2010-11 UESRWWN LOCATIONS
Mt. Vernon
Lind
Pullman
Walla Walla
St. Paul
Oconto
Arlington
Ingham Co
E Lansing
Nairn
Ithaca
Dekalb
Napoleon
Wooster
Clay Center
Delphi
Tipton
Urbana
Lafayette
Columbia
Brownstown
Clarksville
Mt. Vernon
Lexington
Warsaw
Winfield
Blacksburg
Schochoh
Enid
Knoxville
Bay
Raleigh
Plymouth
Laurel Springs
Stuttgart
Cleveland
Griffin
Farmersville

YIELD (bu/acre)

		Bay		Griffin		Brownstown		Urbana		Battle Ground		Delphi	
		AR	a	GA		IL	ab	IL	ab	IN	a	IN	a
		Hancock	rank	Johnson	rank	Kolb	rank	Kolb	rank	Obert	rank	Fogleman	rank
1	INW0411	42.7	35	63.9	31	28.3	38	75.3	34	46.9	37	72.0	4
2	Branson	55.2	19	111.3	5	60.1	15	90.7	8	75.5	1	70.9	6
3	Bess	58.3	15	104.8	10	65.3	5	83.2	20	73.2	4	53.7	27
4	Shirley	64.4	8	68.6	29	46.8	29	95.5	1	67.1	13	84.9	1
5	T171	53.2	21	96.2	17	53.4	25	86.6	15	57.2	31	55.9	25
6	MO 080104	67.4	4	86.6	22	57.4	20	91.8	4	70.8	8	41.9	38
7	OH05-200-74	41.9	36	74.7	27	61.4	11	82.3	23	52.5	35	60.6	17
8	IL04-24668	59.9	13	59.7	32	61.2	13	91.3	7	60.9	26	42.2	37
9	IL05-4236	62.1	9	92.4	20	72.8	1	85.1	17	67.9	11	52.9	30
10	TN902	52.8	22	56.8	33	32.2	37	78.1	30	57.8	29	66.7	11
11	NC05-19896	47.9	29	95.6	18	54.8	24	82.1	24	58.1	28	73.7	3
12	X08-18A3	57.7	16	104.9	9	46.0	30	85.2	16	64.8	18	65.9	13
13	X08-39D	49.7	28	99.0	13	58.2	18	87.6	13	59.5	27	56.8	21
14	G09408	60.2	12	84.5	23	58.6	17	91.6	5	62.7	22	64.7	15
15	G09419	65.4	6	88.7	21	63.9	6	82.9	21	67.0	14	57.7	19
16	G09607	50.9	27	54.1	35	60.2	14	82.8	22	72.2	6	66.5	12
17	IL06-14262	54.7	20	79.6	24	72.3	2	90.4	9	72.4	5	56.5	23
18	OH06-150-57	45.7	32	98.2	14	45.7	31	78.9	28	74.8	3	78.9	2
19	OH06-180-57	47.0	31	93.4	19	61.3	12	80.7	26	66.7	16	51.9	33
20	T177	59.6	14	106.2	8	40.0	33	73.8	35	57.6	30	52.8	31
21	T178	38.5	37	97.3	15	40.0	33	70.7	36	52.1	36	52.6	32
22	GA021087-9LE33	47.7	30	49.9	36	62.2	9	78.0	31	61.7	24	53.7	28
23	GA011446-9LE35	60.7	10	117.9	4	43.9	32	81.3	25	67.0	14	64.3	16
24	MH07-7483	51.7	25	128.1	2	49.6	28	88.3	11	55.2	32	68.1	10
25	MH07-7474	60.3	11	128.2	1	71.6	3	93.2	2	71.3	7	69.8	8
26	P04702A1-18	70.2	3	107.3	7	53.3	26	91.4	6	55.2	32	54.8	26
27	P0537A1-12	78.7	1	97.3	15	62.3	8	87.6	13	70.1	9	71.9	5
28	P06403A1-4	52.2	24	104.0	11	37.3	35	84.0	19	44.2	38	56.4	24
29	KY02C-3005-25	56.3	18	68.2	30	56.2	22	77.3	32	63.6	21	58.9	18
30	KY02C-3004-07	51.4	26	43.2	37	61.9	10	78.5	29	64.7	19	65.2	14
31	VA05W-251	71.3	2	77.6	25	55.2	23	88.0	12	67.6	12	57.3	20
32	VA08W-176	43.5	34	118.3	3	68.0	4	79.5	27	64.6	20	70.7	7
33	VA08W-294	64.4	7	102.6	12	35.3	36	92.7	3	74.9	2	49.5	34
34	TN1102	56.8	17	72.3	28	52.7	27	89.0	10	70.1	9	69.4	9
35	NC07-23880	43.7	33	76.2	26	58.0	19	84.6	18	65.6	17	49.2	35
36	MSU Line E5011	31.4	38	55.0	34	58.8	16	67.7	37	62.5	23	46.3	36
37	MSU Line E5024	52.3	23	33.0	38	56.8	21	65.4	38	54.8	34	56.6	22
38	MSU Line E6012	65.8	5	108.2	6	63.6	7	77.3	32	61.5	25	53.2	29
LOCATION MEANS		55.1		86.9		54.9		83.4		63.5		60.4	
LSD (.05)		15.6				5.8		7.7					
CV %		13.9				6.5		5.7					
Reps		2		1		3		3		1		1	
Harvest Plot Area (sq.ft.)				50		34		34		32		58	

YIELD (bu/acre)

		Lafayette		Mt. Vernon		W Lafayette		Winfield		Lexington		Schochoh	
		IN	a	IN	ab	IN	a	KS	b	KY	ab	KY	a
		Moreno	rank	Fogleman	rank	Ohm	rank	Perry	rank	Van Sanford	rank	Van Sanford	rank
1	INW0411	78.8	33	67.3	27	91.5	14	60.5	26	53.5	23	57.5	36
2	Branson	92.6	8	71.5	15	96.5	5	68.7	10	52.5	27	74.4	11
3	Bess	83.0	25	73.7	8	98.0	2	70.0	9	68.4	3	73.0	12
4	Shirley	83.1	23	76.7	5	95.8	6	66.6	14	64.1	9	69.3	25
5	T171	78.0	34	71.8	14	83.8	26	71.3	8	49.7	29	61.7	34
6	MO 080104	90.3	10	71.4	16	86.3	22	65.5	19	64.6	8	81.5	4
7	OH05-200-74	78.9	31	68.4	25	90.8	17	46.4	33	66.0	7	72.8	14
8	IL04-24668	90.0	11	67.5	26	95.5	7	65.9	18	54.3	21	77.0	6
9	IL05-4236	75.3	36	70.8	19	88.0	20	63.3	23	56.5	18	63.6	33
10	TN902	89.3	12	69.4	24	91.2	16	68.5	12	49.6	30	72.8	13
11	NC05-19896	96.7	1	64.5	31	75.2	34	67.9	13	62.3	13	72.6	16
12	X08-18A3	92.3	9	78.8	3	93.7	9	64.9	22	63.0	12	69.5	23
13	X08-39D	96.2	2	72.7	12	76.4	32	65.2	21	59.9	16	67.4	27
14	G09408	86.7	17	73.7	9	92.7	10	35.7	38	63.5	10	77.8	5
15	G09419	86.0	18	72.2	13	84.1	25	44.4	34	60.5	15	57.1	37
16	G09607	80.5	28	63.2	35	91.2	15	57.9	28	58.4	17	65.2	30
17	IL06-14262	94.3	4	75.4	7	97.0	3	74.1	5	71.1	2	71.5	18
18	OH06-150-57	78.8	32	71.1	17	84.4	24	65.4	20	36.5	37	75.7	10
19	OH06-180-57	87.0	16	64.5	33	67.3	37	40.8	37	54.4	20	70.7	19
20	T177	81.9	27	59.2	36	80.2	28	66.2	16	34.8	38	67.8	26
21	T178	85.4	20	63.9	34	85.3	23	76.2	2	44.5	34	55.9	38
22	GA021087-9LE33	79.2	30	54.1	38	60.3	38	41.1	36	46.7	32	58.0	35
23	GA011446-9LE35	85.1	21	58.3	37	74.1	36	54.6	29	41.5	35	66.7	29
24	MH07-7483	94.3	5	79.8	2	80.6	27	65.9	17	45.2	33	76.5	9
25	MH07-7474	83.0	24	78.6	4	89.2	19	53.1	30	49.8	28	81.9	3
26	P04702A1-18	87.1	15	65.5	30	92.1	11	73.2	6	55.5	19	70.0	21
27	P0537A1-12	94.8	3	70.5	21	91.9	13	74.5	4	54.0	22	84.4	2
28	P06403A1-4	87.4	14	71.1	18	79.0	29	59.4	27	41.2	36	76.7	7
29	KY02C-3005-25	84.4	22	70.5	20	77.4	30	60.7	25	60.9	14	69.7	22
30	KY02C-3004-07	93.1	7	65.8	29	75.8	33	50.9	31	48.9	31	63.9	32
31	VA05W-251	87.4	13	64.5	32	90.1	18	72.0	7	67.1	5	76.6	8
32	VA08W-176	93.4	6	72.9	11	98.3	1	63.2	24	53.4	25	85.5	1
33	VA08W-294	85.8	19	69.5	23	96.7	4	41.9	35	66.2	6	72.8	15
34	TN1102	77.9	35	76.3	6	94.0	8	74.8	3	53.5	24	71.9	17
35	NC07-23880	82.2	26	66.6	28	75.1	35	68.6	11	63.2	11	64.4	31
36	MSU Line E5011	74.3	37	70.4	22	87.8	21	66.3	15	68.1	4	67.2	28
37	MSU Line E5024	71.6	38	81.7	1	77.4	31	48.2	32	72.4	1	70.2	20
38	MSU Line E6012	79.6	29	73.7	10	91.9	12	77.2	1	52.6	26	69.4	24
LOCATION MEANS		85.4		69.9		86.2		61.9		56.0		70.5	
LSD (.05)				10.2		19		8.3		10.9		15.7	
CV %				7.7		10.9		6.6		9.2		10.5	
Reps		1		2		2		2		2		2	
Harvest Plot Area (sq.ft.)				58				50		40		40	

YIELD (bu/acre)

		Clarksville		Ingham Co.		Cleveland		Columbia		Clay Center		Ithaca	
		MD	ab	MI	ab	MS		MO	ab	NE	b	NY	a
		Costa	rank	Lewis	rank	Hancock	rank	McKendry	rank	Baenziger	rank	Sorrells	rank
1	INW0411	82.0	13	55.9	36	70.7	25	29.2	35	39.9	35	49.2	30
2	Branson	90.2	4	75.3	6	65.1	30	33.8	26	46.4	28	69.7	2
3	Bess	87.1	8	34.3	38	85.0	5	42.7	4	56.1	9	63.7	4
4	Shirley	82.5	11	78.7	3	85.7	4	40.5	7	53.2	14	60.2	10
5	T171	72.3	28	55.1	37	81.9	8	35.9	18	50.6	22	55.7	17
6	MO 080104	82.0	12	67.0	24	71.8	23	35.9	18	53.2	14	54.9	18
7	OH05-200-74	69.6	29	71.8	13	66.4	29	30.9	32	41.0	34	54.0	21
8	IL04-24668	80.8	16	70.1	16	68.4	27	31.2	31	52.5	18	58.5	13
9	IL05-4236	88.0	6	68.0	23	70.8	24	36.8	15	51.0	20	61.5	6
10	TN902	86.5	9	81.5	2	54.7	38	28.5	36	52.7	17	50.2	26
11	NC05-19896	78.2	20	70.5	14	59.3	34	31.9	30	45.0	30	46.1	35
12	X08-18A3	95.4	1	68.4	20	67.1	28	32.1	29	47.5	27	48.0	32
13	X08-39D	73.9	26	68.3	22	86.8	2	37.6	12	53.0	16	58.4	14
14	G09408	58.4	37	76.1	5	73.8	21	35.7	20	45.3	29	58.6	12
15	G09419	69.3	31	60.9	30	87.2	1	41.3	5	56.4	8	60.2	9
16	G09607	78.1	21	68.8	19	73.9	20	24.7	38	47.6	26	64.3	3
17	IL06-14262	88.9	5	73.5	9	77.7	12	49.4	1	62.8	1	77.3	1
18	OH06-150-57	81.7	15	65.6	25	80.7	10	32.9	27	39.8	36	47.1	34
19	OH06-180-57	60.5	35	56.7	34	75.3	17	39.9	9	44.2	32	62.2	5
20	T177	69.5	30	60.8	31	55.5	37	35.5	22	57.6	5	54.5	20
21	T178	65.3	33	56.0	35	76.4	15	34.1	25	55.9	11	47.8	33
22	GA021087-9LE33	29.5	38	65.5	26	84.9	6	30.9	32	36.2	38	25.5	38
23	GA011446-9LE35	74.6	25	58.4	32	58.8	35	34.2	24	44.5	31	45.7	36
24	MH07-7483	75.1	24	72.0	12	84.6	7	39.3	10	55.6	12	60.7	8
25	MH07-7474	78.1	22	68.4	20	77.0	13	36.0	16	48.0	25	57.9	15
26	P04702A1-18	79.0	19	64.8	28	68.6	26	30.2	34	36.6	37	54.0	22
27	P0537A1-12	85.6	10	78.4	4	76.9	14	46.0	2	51.3	19	49.6	27
28	P06403A1-4	90.5	3	72.3	11	61.1	33	32.6	28	41.9	33	48.2	31
29	KY02C-3005-25	80.1	17	70.3	15	57.6	36	28.3	37	53.3	13	45.5	37
30	KY02C-3004-07	63.3	34	57.0	33	74.1	19	37.8	11	50.6	21	50.3	25
31	VA05W-251	81.9	14	74.0	7	71.9	22	41.3	5	56.0	10	54.5	19
32	VA08W-176	87.4	7	69.1	18	75.3	18	35.0	23	48.3	24	59.2	11
33	VA08W-294	72.8	27	81.6	1	64.5	31	36.0	16	58.7	3	57.5	16
34	TN1102	90.8	2	72.7	10	80.0	11	37.0	13	56.8	6	49.4	28
35	NC07-23880	66.7	32	69.6	17	76.1	16	43.0	3	58.1	4	49.3	29
36	MSU Line E5011	77.9	23	73.6	8	64.5	32	40.5	7	56.4	7	53.8	23
37	MSU Line E5024	58.7	36	65.3	27	81.0	9	36.9	14	48.7	23	53.4	24
38	MSU Line E6012	79.1	18	64.6	29	85.9	3	35.6	21	59.3	2	61.0	7
LOCATION MEANS		76.6		67.4		73.1		35.8		50.3		54.7	
LSD (.05)		13.9		8.8				4.4		6.6		11.6	
CV %		8.96		7.7				9.02		6.5		10.3	
Reps		2		2		1		3		2		3	
Harvest Plot Area (sq.ft.)						60.67		55		55		41	

YIELD (bu/acre)

		Plymouth		Napoleon		Wooster		Nairn		Knoxville		Farmersville	
		NC	ab	OH	ab	OH	a	ON	ab	TN	a	TX	
		Murphy	rank	Fogleman	rank	Sneller	rank	Etienne	rank	West	rank	Sutton	rank
1	INW0411	68.3	31	74.7	17	55.8	35	68.5	29	45.9	36	43.3	35
2	Branson	79.3	18	76.4	10	79.0	7	80.0	1	62.3	6	55.3	19
3	Bess	76.7	22	75.7	11	68.7	24	70.9	21	55.0	19	59.1	10
4	Shirley	98.6	1	78.7	2	89.9	1	72.8	13	65.2	2	51.1	30
5	T171	61.7	35	75.0	15	53.5	36	67.9	31	64.8	4	56.1	17
6	MO 080104	84.3	11	77.9	3	80.6	6	69.6	25	47.3	35	55.4	18
7	OH05-200-74	63.2	34	79.8	1	64.0	29	72.2	14	48.1	32	47.1	33
8	IL04-24668	82.7	13	67.4	37	68.5	25	58.6	36	59.6	11	51.5	28
9	IL05-4236	76.7	23	73.0	26	71.1	17	71.3	17	54.1	23	65.7	3
10	TN902	88.9	4	72.9	27	71.1	17	79.5	2	58.0	15	48.6	31
11	NC05-19896	87.8	5	72.4	29	69.9	22	70.2	22	47.7	34	53.4	24
12	X08-18A3	76.0	25	73.1	25	61.5	31	78.6	4	54.5	21	57.5	14
13	X08-39D	79.3	16	71.7	33	74.7	13	73.1	11	51.1	29	57.2	15
14	G09408	73.6	27	72.0	31	70.8	19	73.0	12	53.5	26	55.2	21
15	G09419	76.1	24	76.5	9	71.9	15	71.3	17	53.6	25	51.3	29
16	G09607	84.3	9	57.3	38	61.1	32	71.2	20	41.4	38	52.9	26
17	IL06-14262	59.0	36	71.8	32	70.1	20	71.3	17	55.0	19	62.2	5
18	OH06-150-57	77.6	20	75.4	13	66.7	27	68.5	29	55.3	18	53.0	25
19	OH06-180-57	68.5	30	73.9	20	70.1	20	70.0	24	53.5	26	58.5	12
20	T177	66.7	33	74.1	19	43.5	37	55.5	37	56.4	17	57.8	13
21	T178	77.4	21	67.6	36	42.7	38	54.9	38	54.5	21	58.6	11
22	GA021087-9LE33	50.1	38	77.1	7	67.2	26	66.6	33	60.6	8	56.9	16
23	GA011446-9LE35	72.2	28	71.7	34	75.5	11	68.7	28	59.4	12	55.3	20
24	MH07-7483	85.2	8	77.8	4	83.9	3	77.1	5	58.9	13	67.0	2
25	MH07-7474	81.6	15	75.5	12	76.1	10	76.2	7	58.4	14	59.2	9
26	P04702A1-18	69.4	29	73.5	23	72.6	14	73.6	10	57.3	16	62.3	4
27	P0537A1-12	84.3	10	74.8	16	83.9	3	76.8	6	64.2	5	69.4	1
28	P06403A1-4	82.0	14	73.2	24	62.5	30	66.2	34	64.9	3	43.3	34
29	KY02C-3005-25	75.8	26	77.3	6	75.0	12	70.2	22	45.7	37	48.3	32
30	KY02C-3004-07	55.8	37	74.6	18	60.6	33	63.6	35	47.9	33	41.2	36
31	VA05W-251	82.9	12	73.6	22	78.6	8	79.2	3	68.7	1	53.8	23
32	VA08W-176	90.8	2	73.7	21	85.7	2	71.6	15	53.0	28	60.0	8
33	VA08W-294	87.4	7	77.3	5	82.3	5	76.1	8	60.4	9	60.9	6
34	TN1102	87.5	6	75.1	14	76.8	9	74.2	9	60.4	9	54.4	22
35	NC07-23880	90.1	3	72.9	28	71.7	16	69.6	25	49.4	30	60.7	7
36	MSU Line E5011	68.3	32	69.6	35	69.2	23	71.5	16	54.1	23	39.5	38
37	MSU Line E5024	79.3	17	72.0	30	65.8	28	69.1	27	61.4	7	39.8	37
38	MSU Line E6012	77.9	19	76.7	8	56.0	34	67.3	32	48.4	31	52.6	27
LOCATION MEANS		77.0		73.8		69.7		70.7		55.5		54.6	
LSD (.05)		13.7		6.02		7.6		4.6		10.6			
CV %		9		4.02				4.01		11.7			
Reps		2		2		2		3		3		1	
Harvest Plot Area (sq.ft.)		56		58		50		44.54		43.5		50	

YIELD (bu/acre)

		Blacksburg		Warsaw		Arlington		Oconto	
		VA	a	VA	ab	WI	ab	WI	a
		Griffey	rank	Griffey	rank	Martinka	rank	Murche	rank
1	INW0411	82.7	27	79.3	28	68.2	33	88.7	24
2	Branson	80.0	31	90.4	8	81.3	6	94.2	18
3	Bess	83.5	25	84.1	17	77.3	12	88.3	26
4	Shirley	79.1	33	99.3	2	75.2	16	81.1	36
5	T171	78.5	35	76.4	32	83.6	3	86.7	31
6	MO 080104	74.6	37	82.2	22	69.9	31	91.6	22
7	OH05-200-74	89.8	13	80.7	26	80.1	8	83.8	34
8	IL04-24668	71.8	38	83.4	19	71.6	26	87.8	27
9	IL05-4236	88.7	16	95.8	5	66.4	37	88.6	25
10	TN902	86.3	20	90.0	10	80.8	7	91.9	20
11	NC05-19896	84.9	23	81.2	24	67.1	36	94.3	17
12	X08-18A3	83.2	26	76.8	31	67.3	35	86.7	30
13	X08-39D	97.7	3	93.1	6	71.1	28	96.3	14
14	G09408	97.3	4	89.4	12	74.9	19	96.0	15
15	G09419	92.6	9	83.2	20	70.8	29	97.7	11
16	G09607	94.6	7	89.9	11	69.7	32	101.1	7
17	IL06-14262	90.7	11	85.3	16	75.0	18	101.0	8
18	OH06-150-57	92.7	8	83.9	18	73.0	23	84.3	32
19	OH06-180-57	84.0	24	77.9	30	78.3	11	97.2	12
20	T177	85.0	22	71.9	35	67.8	34	87.5	28
21	T178	91.6	10	62.6	37	73.2	22	86.9	29
22	GA021087-9LE33	99.8	2	70.7	36	75.2	17	81.8	35
23	GA011446-9LE35	80.7	29	86.8	15	70.5	30	101.7	5
24	MH07-7483	79.0	34	96.9	4	90.8	1	93.0	19
25	MH07-7474	95.4	6	97.2	3	81.6	5	90.5	23
26	P04702A1-18	87.1	18	74.4	33	62.1	38	72.8	38
27	P0537A1-12	88.5	17	89.2	13	83.5	4	96.0	16
28	P06403A1-4	89.8	13	79.7	27	76.0	13	83.8	33
29	KY02C-3005-25	87.1	19	74.2	34	75.6	14	91.8	21
30	KY02C-3004-07	103.1	1	58.2	38	71.2	27	78.6	37
31	VA05W-251	79.9	32	100.4	1	74.7	20	106.0	4
32	VA08W-176	90.6	12	86.9	14	71.8	25	108.7	1
33	VA08W-294	97.1	5	90.2	9	72.0	24	99.7	9
34	TN1102	88.8	15	91.0	7	79.8	9	108.0	2
35	NC07-23880	76.7	36	78.1	29	75.4	15	98.9	10
36	MSU Line E5011	86.1	21	81.8	23	79.7	10	107.4	3
37	MSU Line E5024	80.6	30	83.1	21	84.3	2	96.8	13
38	MSU Line E6012	82.4	28	80.8	25	73.6	21	101.1	6
LOCATION MEANS		86.9		83.6		74.7		92.9	
LSD (.05)		20		8.8		9.6		15.9	
CV %		13.6		6.3		8		12.2	
Reps		2		2		3		3	
Harvest Plot Area (sq.ft.)		45		45		55		50	

YIELD (bu/acre)

		ENTRY MEANS ALL LOCATIONS	rank	ENTRY MEANS IN-REGION [a]	rank	ENTRY MEANS CV <10% [b]	rank
1	INW0411	62.2	37	63.6	35	62.5	34
2	Branson	74.2	6	75.3	3	73.4	6
3	Bess	71.9	11	71.2	13	70.0	16
4	Shirley	74.1	7	76.1	2	75.8	1
5	T171	66.9	26	66.0	33	65.8	31
6	MO 080104	70.5	15	71.3	12	71.2	12
7	OH05-200-74	65.7	32	68.0	29	68.9	21
8	IL04-24668	67.5	24	69.2	21	68.3	25
9	IL05-4236	70.6	13	71.1	14	71.8	9
10	TN902	68.1	22	70.7	16	69.8	17
11	NC05-19896	68.3	21	69.1	22	68.6	23
12	X08-18A3	70.0	16	70.4	18	70.1	14
13	X08-39D	71.1	12	70.9	15	70.5	13
14	G09408	69.9	17	72.2	11	70.0	15
15	G09419	69.7	18	70.5	17	69.1	19
16	G09607	67.3	25	69.5	19	67.4	27
17	IL06-14262	74.3	3	74.9	4	73.6	4
18	OH06-150-57	68.3	20	68.5	23	65.9	30
19	OH06-180-57	66.3	30	67.1	31	65.5	32
20	T177	63.6	34	62.4	36	59.1	37
21	T178	63.1	35	61.0	37	59.2	36
22	GA021087-9LE33	59.7	38	61.0	38	58.9	38
23	GA011446-9LE35	66.9	27	67.1	32	63.5	33
24	MH07-7483	74.3	4	73.0	10	73.1	8
25	MH07-7474	74.5	2	74.9	5	74.0	3
26	P04702A1-18	68.4	19	68.1	26	66.1	29
27	P0537A1-12	76.3	1	76.8	1	74.4	2
28	P06403A1-4	66.5	28	67.4	30	67.2	28
29	KY02C-3005-25	66.4	29	68.4	24	68.1	26
30	KY02C-3004-07	62.5	36	64.8	34	61.4	35
31	VA05W-251	73.3	8	74.8	6	73.6	5
32	VA08W-176	74.2	5	74.5	7	71.7	10
33	VA08W-294	72.4	10	73.8	9	71.4	11
34	TN1102	72.9	9	74.0	8	73.3	7
35	NC07-23880	68.0	23	68.0	28	69.8	18
36	MSU Line E5011	66.1	31	68.2	25	69.0	20
37	MSU Line E5024	64.9	33	68.1	27	68.7	22
38	MSU Line E6012	70.6	14	69.3	20	68.6	24
LOCATION MEANS		69.0		69.8		68.7	
LSD (.05)							
CV %							
Reps							
Harvest Plot Area (sq.ft.)							

TEST WEIGHT (lbs/bu)

		Bay AR Hancock	Griffin GA Johnson	Brownstown IL Kolb	Urbana IL Kolb	Battle Ground IN Obert
1	INW0411	52.2	57.3	52.5	55.3	50.3
2	Branson	55.3	60.2	53.7	56.0	54.6
3	Bess	54.3	61.5	56.7	54.6	55.9
4	Shirley	54.4	55.5	52.2	54.4	53.9
5	T171	55.4	59.3	52.0	55.6	51.9
6	MO 080104	60.2	61.6	58.1	60.2	57.8
7	OH05-200-74	56.0	52.4	54.2	56.1	52.1
8	IL04-24668	59.7	56.7	56.6	58.3	55.7
9	IL05-4236	59.3	61.0	58.0	57.5	55.6
10	TN902	57.3	56.2	53.8	54.4	53.6
11	NC05-19896	57.3	60.9	54.1	57.0	56.6
12	X08-18A3	56.3	56.3	54.3	55.6	54.7
13	X08-39D	57.2	59.7	54.9	54.0	51.8
14	G09408	56.4	55.8	56.0	57.4	56.9
15	G09419	59.0	59.8	55.6	57.4	55.3
16	G09607	55.2	54.5	56.7	56.5	57.1
17	IL06-14262	53.7	53.8	56.7	57.7	56.5
18	OH06-150-57	52.9	57.8	56.0	54.4	55.4
19	OH06-180-57	55.2	52.8	53.7	57.2	53.7
20	T177	56.4	59.0	54.5	56.6	52.6
21	T178	54.7	58.9	55.1	54.5	54.0
22	GA021087-9LE33	49.5	50.8	54.7	48.7	56.3
23	GA011446-9LE35	57.5	59.3	52.5	56.6	54.1
24	MH07-7483	55.1	51.8	52.9	54.6	51.8
25	MH07-7474	54.2	59.0	55.3	56.9	55.5
26	P04702A1-18	59.2	59.9	54.6	55.3	56.5
27	P0537A1-12	58.5	59.5	56.4	58.4	57.9
28	P06403A1-4	54.0	59.6	53.4	54.2	52.9
29	KY02C-3005-25	57.6	50.6	57.6	57.5	58.1
30	KY02C-3004-07	56.5	55.7	55.9	57.8	57.6
31	VA05W-251	54.6	56.9	53.3	55.3	55.0
32	VA08W-176	56.7	57.3	57.6	57.4	57.2
33	VA08W-294	60.2	60.5	55.5	57.0	57.9
34	TN1102	55.3	53.5	55.7	55.4	56.3
35	NC07-23880	51.6	48.7	53.8	52.7	57.8
36	MSU Line E5011	50.0	49.9	51.5	49.1	49.6
37	MSU Line E5024	54.7	49.1	52.7	54.8	53.7
38	MSU Line E6012	57.6	59.2	51.2	54.2	51.7
LOCATION MEANS		55.8	56.6	54.7	55.7	54.9

TEST WEIGHT (lbs/bu)

		Lafayette IN Moreno	Mt. Vernon IN Fogleman	W Lafayette IN Ohm	Winfield KS Perry	Lexington KY Van Sanford
1	INW0411	57.2	58.1	57.9	59.1	54.1
2	Branson	56.6	56.5	57.9	62.4	54.0
3	Bess	57.8	59.1	59.8	64.9	58.6
4	Shirley	55.9	56.0	56.8	60.4	53.9
5	T171	56.1	57.6	59.0	63.6	51.6
6	MO 080104	58.7	57.0	61.4	65.6	58.0
7	OH05-200-74	55.6	58.4	58.1	57.8	55.7
8	IL04-24668	58.3	58.9	60.8	66.1	55.7
9	IL05-4236	57.4	58.1	60.1	64.6	55.5
10	TN902	56.5	54.7	57.8	63.1	53.2
11	NC05-19896	58.9	58.2	60.1	64.8	54.7
12	X08-18A3	58.3	58.8	59.9	62.8	55.0
13	X08-39D	57.1	59.1	60.7	62.1	57.2
14	G09408	57.3	58.6	59.2	59.0	57.6
15	G09419	57.9	58.7	60.7	60.0	57.3
16	G09607	58.0	58.0	58.7	65.2	54.4
17	IL06-14262	57.5	59.1	59.8	65.9	55.5
18	OH06-150-57	56.5	59.3	59.6	63.6	
19	OH06-180-57	56.6	57.2	58.8	59.3	53.4
20	T177	56.5	56.5	58.7	64.1	
21	T178	57.8	56.6	59.1	65.0	52.3
22	GA021087-9LE33	49.4	53.2	57.1	54.6	53.9
23	GA011446-9LE35	57.9	57.4	58.9	61.6	52.3
24	MH07-7483	56.4	57.0	58.6	57.9	53.1
25	MH07-7474	54.5	59.1	59.6	62.3	55.0
26	P04702A1-18	58.2	57.8	59.6	62.8	56.2
27	P0537A1-12	59.2	59.0	61.1	64.8	53.3
28	P06403A1-4	57.2	56.6	59.6	62.2	53.2
29	KY02C-3005-25	61.4	60.4	62.3	65.5	59.8
30	KY02C-3004-07	60.0	59.2	61.7	61.0	
31	VA05W-251	56.7	53.9	57.7	63.0	55.4
32	VA08W-176	59.8	60.2	60.9	63.8	58.3
33	VA08W-294	59.0	59.8	60.3	61.3	57.8
34	TN1102	56.6	57.8	59.7	63.9	54.2
35	NC07-23880	57.2	58.2	59.1	63.7	57.2
36	MSU Line E5011	51.7	55.6	57.3	58.7	53.7
37	MSU Line E5024	56.9	57.2	59.4	60.0	55.4
38	MSU Line E6012	55.1	56.3	59.3	65.3	54.1
LOCATION MEANS		57.1	57.7	59.4	62.4	55.2

TEST WEIGHT (lbs/bu)

		Schochoh KY Van Sanford	Clarksville MD Costa	Ingham Co. MI Lewis	Cleveland MS Hancock	Columbia MO McKendry
1	INW0411	52.0	56.8	57.3	56.7	49.9
2	Branson	52.1	56.5	57.8	57.9	52.1
3	Bess	53.7	59.1	59.0	59.6	54.8
4	Shirley	51.6	54.2	58.2	57.2	51.2
5	T171	52.1	53.4	59.3	58.4	50.5
6	MO 080104	56.5	61.0	60.6	60.3	54.8
7	OH05-200-74	51.5	53.6	57.0	58.6	51.0
8	IL04-24668	55.0	57.7	60.1	60.2	54.4
9	IL05-4236	53.7	58.8	61.0	59.0	53.0
10	TN902	50.9	54.7	58.4	58.6	51.0
11	NC05-19896	54.3	58.3	58.3	59.8	53.7
12	X08-18A3	53.5	58.1	59.5	59.7	52.1
13	X08-39D	54.2	58.1	58.6	61.6	54.8
14	G09408	55.1	55.6	60.5	60.4	52.9
15	G09419	53.8	58.2	60.0	60.9	54.3
16	G09607	53.6	58.8	60.6	60.1	51.6
17	IL06-14262	54.1	58.4	60.5	61.1	54.6
18	OH06-150-57	55.1	57.7	58.8	61.0	54.8
19	OH06-180-57	51.8	54.2	57.7	59.0	52.7
20	T177	51.2	56.3	60.4	58.6	51.0
21	T178	50.8	56.2	59.7	58.3	50.8
22	GA021087-9LE33	53.3	51.2	52.8	58.9	52.3
23	GA011446-9LE35	51.2	55.5	58.2	56.6	52.1
24	MH07-7483	52.1	55.8	57.1	59.0	51.3
25	MH07-7474	50.2	57.1	58.3	59.5	53.7
26	P04702A1-18	53.3	56.9	58.0	58.8	53.1
27	P0537A1-12	54.4	57.3	60.0	60.1	54.6
28	P06403A1-4	51.9	56.8	58.3	57.4	50.3
29	KY02C-3005-25	57.1	60.5	60.0	61.8	54.4
30	KY02C-3004-07	54.3	57.3	60.3	61.2	55.2
31	VA05W-251	50.7	56.4	58.8	59.0	51.1
32	VA08W-176	54.9	58.7	59.4	61.2	54.5
33	VA08W-294	53.5	57.2	57.9	60.6	54.5
34	TN1102	52.6	58.1	58.3	59.9	52.8
35	NC07-23880	52.6	55.4	57.9	60.9	54.6
36	MSU Line E5011	51.5	53.8	57.3	57.9	51.1
37	MSU Line E5024	51.7	55.1	58.2	58.8	51.6
38	MSU Line E6012	50.4	56.4	58.4	59.2	51.1
LOCATION MEANS		53.0	56.7	58.8	59.4	52.7

TEST WEIGHT (lbs/bu)

		Clay Center NE Baenziger	Ithaca NY Sorrells	Plymouth NC Murphy	Napoleon OH Fogleman	Wooster OH Sneller
1	INW0411	52.5	58.6	58.3	59.5	55.2
2	Branson	51.1	58.7	61.2	59.1	56.9
3	Bess	54.5	59.5	59.2	61.3	59.5
4	Shirley	51.3	58.0	59.1	59.1	56.0
5	T171	48.6	59.6	58.7	60.6	54.8
6	MO 080104	54.5	61.0	62.4	63.0	60.3
7	OH05-200-74	51.5	57.9	57.0	60.9	55.2
8	IL04-24668	54.9	61.2	61.9	61.1	58.8
9	IL05-4236	54.1	61.2	60.8	60.6	58.0
10	TN902	52.1	56.8	59.8	58.6	57.3
11	NC05-19896	53.6	60.9	61.1	61.1	60.4
12	X08-18A3	53.7	57.8	61.3	62.1	58.2
13	X08-39D	55.3	60.5	60.9	61.9	60.0
14	G09408	53.5	60.8	59.3	61.0	57.7
15	G09419	53.3	61.2	61.1	61.3	60.4
16	G09607	55.0	60.0	59.6	60.7	57.2
17	IL06-14262	55.8	60.1	60.2	62.0	59.2
18	OH06-150-57	56.0	61.2	60.7	61.4	59.1
19	OH06-180-57	52.8	59.4	57.5	61.0	57.8
20	T177	53.4	60.6	61.4	59.7	55.9
21	T178	54.0	60.3	61.1	59.4	53.8
22	GA021087-9LE33	54.2	58.0	53.0	61.9	60.9
23	GA011446-9LE35	53.8	58.6	59.9	60.0	58.0
24	MH07-7483	55.2	58.5	58.7	60.1	57.2
25	MH07-7474	52.8	57.5	58.5	61.0	59.6
26	P04702A1-18	50.8	59.1	59.7	60.1	58.7
27	P0537A1-12	54.8	59.7	60.2	61.4	59.7
28	P06403A1-4	51.6	59.3	59.7	60.6	55.1
29	KY02C-3005-25	57.6	63.5	61.9	62.7	61.6
30	KY02C-3004-07	55.7	62.1	60.7	62.6	58.7
31	VA05W-251	53.8	58.4	59.4	60.6	58.7
32	VA08W-176	56.1	60.8	61.1	62.6	61.2
33	VA08W-294	55.3	60.6	60.3	61.0	61.0
34	TN1102	56.1	57.6	59.6	60.1	58.9
35	NC07-23880	55.0	59.3	60.5	61.2	60.7
36	MSU Line E5011	50.7	55.7	57.9	60.2	55.6
37	MSU Line E5024	54.8	60.0	58.8	60.4	56.7
38	MSU Line E6012	54.2	59.0	58.4	59.8	55.2
LOCATION MEANS		53.8	59.6	59.7	60.8	58.1

TEST WEIGHT (lbs/bu)

		Nairn ON Etienne	Knoxville TN West	Farmersville TX Sutton	Blacksburg VA Griffey	Warsaw VA Griffey
1	INW0411	60.0	54.5	56.7	54.8	60.3
2	Branson	60.3	47.6	58.1	54.1	61.7
3	Bess	60.7	50.3	59.6	54.3	62.0
4	Shirley	59.7	50.3	58.1	53.9	61.0
5	T171	59.9	56.9	58.0	55.2	61.0
6	MO 080104	61.6	58.7	59.7	56.4	63.0
7	OH05-200-74	58.7	56.0	58.0	55.1	59.4
8	IL04-24668	62.1	56.8	60.2	53.0	63.0
9	IL05-4236	60.7	58.0	60.5	54.9	62.7
10	TN902	59.5	59.4	59.0	53.7	61.2
11	NC05-19896	62.6	50.2	60.1	55.3	62.3
12	X08-18A3	62.2	53.0	61.3	57.0	61.1
13	X08-39D	62.2	50.3	60.1	57.5	62.4
14	G09408	61.4	51.0	60.5	58.3	61.8
15	G09419	61.5	57.9	58.2	54.1	62.3
16	G09607	60.5	56.9	58.7	56.6	62.3
17	IL06-14262	60.5	59.5	60.7	55.7	60.9
18	OH06-150-57	61.3	58.6	59.1	56.3	62.4
19	OH06-180-57	58.8	57.6	58.0	56.4	60.3
20	T177	60.2	57.4	58.5	57.4	62.0
21	T178	60.3	54.3	57.4	56.0	61.0
22	GA021087-9LE33	60.9	53.0	57.6	58.4	57.4
23	GA011446-9LE35	61.5	51.6	60.7	56.9	61.8
24	MH07-7483	59.6	49.5	60.2	54.9	62.0
25	MH07-7474	60.8	57.2	59.1	54.3	60.9
26	P04702A1-18	61.3	58.1	58.8	57.0	61.5
27	P0537A1-12	61.0	58.2	61.1	55.4	62.5
28	P06403A1-4	60.2	55.8	58.2	57.7	60.9
29	KY02C-3005-25	63.4	58.6	61.9	55.0	63.9
30	KY02C-3004-07	62.6	59.2	60.3	56.2	61.7
31	VA05W-251	60.3	51.9	57.0	53.7	62.0
32	VA08W-176	61.7	53.2	60.2	55.4	63.0
33	VA08W-294	61.4	58.4	59.3	55.2	62.2
34	TN1102	60.0	49.4	58.4	55.5	61.1
35	NC07-23880	61.0	57.7	59.6	58.5	62.3
36	MSU Line E5011	58.5	54.0	53.7	54.4	58.5
37	MSU Line E5024	60.3	56.5	57.2	54.7	61.7
38	MSU Line E6012	59.3	56.5	57.6	55.0	61.3
LOCATION MEANS		60.7	55.1	59.0	55.6	61.5

TEST WEIGHT (lbs/bu)

		Arlington WI Martinka	Oconto WI Murche	ENTRY MEANS ALL LOCATIONS	
					rank
1	INW0411	56.6	57.7	56.0	35
2	Branson	59.0	58.3	56.7	27
3	Bess	58.5	58.0	58.0	14
4	Shirley	57.6	57.8	55.8	36
5	T171	57.3	58.2	56.5	32
6	MO 080104	59.4	59.5	59.7	2
7	OH05-200-74	57.0	57.5	56.0	34
8	IL04-24668	58.4	59.3	58.7	7
9	IL05-4236	58.9	59.0	58.6	8
10	TN902	59.4	57.8	56.6	29
11	NC05-19896	58.5	59.7	58.2	12
12	X08-18A3	59.3	59.3	57.8	17
13	X08-39D	58.1	60.2	58.2	13
14	G09408	59.2	59.2	57.9	16
15	G09419	58.1	58.1	58.4	11
16	G09607	57.5	58.7	57.9	15
17	IL06-14262	59.7	58.6	58.4	9
18	OH06-150-57	59.7	60.3	58.4	10
19	OH06-180-57	58.3	57.7	56.6	28
20	T177	59.0	58.6	57.6	20
21	T178	58.8	58.1	57.0	24
22	GA021087-9LE33	59.5	60.7	55.3	37
23	GA011446-9LE35	58.7	60.3	57.2	23
24	MH07-7483	58.3	58.6	56.2	33
25	MH07-7474	58.9	59.3	57.4	21
26	P04702A1-18	54.8	56.7	57.7	18
27	P0537A1-12	59.3	60.1	58.8	6
28	P06403A1-4	59.4	59.3	56.9	25
29	KY02C-3005-25	60.4	60.5	59.8	1
30	KY02C-3004-07	58.6	59.6	58.9	4
31	VA05W-251	58.4	60.0	56.7	26
32	VA08W-176	58.9	61.0	59.0	3
33	VA08W-294	60.0	60.4	58.8	5
34	TN1102	58.8	58.8	57.2	22
35	NC07-23880	60.5	59.3	57.7	19
36	MSU Line E5011	55.1	56.9	54.4	38
37	MSU Line E5024	58.4	58.8	56.6	31
38	MSU Line E6012	56.2	55.9	56.6	30
LOCATION MEANS		58.5	58.9	57.5	

HEADING DATE (Julian Days)

		Bay AR Hancock	Griffin GA Johnson	Urbana IL Kolb	Battle Ground IN Obert	Delphi IN Fogleman
1	INW0411	107.0	96	133	133.5	136.7
2	Branson	107.5	96	133	120.0	136.0
3	Bess	110.0	101	133	120.0	139.0
4	Shirley	110.5	102	136	120.0	139.3
5	T171	110.0	102	136	136.0	139.0
6	MO 080104	109.5	97	135	134.0	140.0
7	OH05-200-74	113.0	109	139	137.0	145.0
8	IL04-24668	107.0	98	133	134.0	136.0
9	IL05-4236	108.0	98	132	134.0	135.0
10	TN902	107.0	98	133	135.5	138.0
11	NC05-19896	108.0	100	133	134.5	139.0
12	X08-18A3	107.5	99	132	134.0	136.3
13	X08-39D	111.0	102	135	120.0	142.0
14	G09408	110.0	104	134	134.0	138.3
15	G09419	107.0	103	132	134.5	138.0
16	G09607	109.5	105	133	135.0	137.0
17	IL06-14262	110.5	107	134	135.0	138.3
18	OH06-150-57	109.5	106	133	135.0	142.0
19	OH06-180-57	112.0	108	138	139.0	144.0
20	T177	104.0	98	133	134.0	136.0
21	T178	105.5	98	134	134.0	137.0
22	GA021087-9LE33	117.0	114	141	142.0	145.0
23	GA011446-9LE35	106.0	98	132	134.0	136.0
24	MH07-7483	111.5	107	138	139.0	141.0
25	MH07-7474	111.0	104	135	137.5	140.0
26	P04702A1-18	108.0	102	132	133.0	137.0
27	P0537A1-12	107.0	102	135	134.5	141.0
28	P06403A1-4	108.0	101	134	134.5	140.0
29	KY02C-3005-25	113.5	109	141	139.5	141.0
30	KY02C-3004-07	111.5	105	139	139.5	142.0
31	VA05W-251	109.0	98	134	137.0	141.0
32	VA08W-176	110.5	104	137	138.5	141.0
33	VA08W-294	108.5	102	134	135.0	139.0
34	TN1102	109.0	103	134	135.0	139.0
35	NC07-23880	111.0	106	140	138.5	142.0
36	MSU Line E5011	117.0	116	142	140.0	142.0
37	MSU Line E5024	113.0	109	140	138.5	141.0
38	MSU Line E6012	111.5	106	138	137.5	140.0
LOCATION MEANS		109.7	103.0	135.3	134.4	139.5

HEADING DATE (Julian Days)

		Lafayette IN Moreno	W Lafayette IN Ohm	Lexington KY Van Sanford	Clarksville MD Costa	Ingham Co. MI Lewis
1	INW0411	132	132.5	131.7	132.0	154.7
2	Branson	133	133.0	129.1	131.0	152.4
3	Bess	136	136.0	132.1	135.0	153.6
4	Shirley	139	136.5	133.6	134.0	155.4
5	T171	137	136.0	131.5	134.0	154.7
6	MO 080104	136	136.5	133.8	133.5	152.2
7	OH05-200-74	139	138.5	138.7	137.0	155.5
8	IL04-24668	133	133.0	130.6	130.5	152.2
9	IL05-4236	133	133.0	131.0	131.0	152.2
10	TN902	132	134.0	131.8	131.5	152.3
11	NC05-19896	133	135.5	132.3	132.5	154.1
12	X08-18A3	132	133.5	130.4	131.0	154.2
13	X08-39D	131	138.5	132.6	135.0	155.8
14	G09408	136	137.5	134.3	136.5	153.7
15	G09419	134	134.5	129.0	132.5	152.9
16	G09607	135	135.0	134.9	134.5	151.3
17	IL06-14262	133	134.0	134.6	134.5	155.4
18	OH06-150-57	136	136.0	139.5	133.5	154.2
19	OH06-180-57	140	141.5	136.2	138.5	155.4
20	T177	132	133.0	128.4	130.0	153.6
21	T178	132	133.0	132.1	131.5	153.2
22	GA021087-9LE33	.	142.5	141.8	143.0	156.2
23	GA011446-9LE35	133	133.0	133.0	131.5	155.4
24	MH07-7483	137	139.0	138.4	135.5	154.6
25	MH07-7474	137	137.5	138.1	136.0	155.5
26	P04702A1-18	133	133.0	135.4	131.0	152.8
27	P0537A1-12	133	137.5	136.8	132.5	154.5
28	P06403A1-4	133	134.5	131.5	132.0	152.7
29	KY02C-3005-25	141	142.0	141.7	138.5	156.6
30	KY02C-3004-07	137	141.0	138.5	137.0	158.2
31	VA05W-251	136	138.5	134.7	135.0	154.1
32	VA08W-176	135	138.0	136.7	134.5	155.1
33	VA08W-294	134	136.5	132.1	135.5	154.0
34	TN1102	135	138.0	134.0	133.5	154.3
35	NC07-23880	140	140.0	137.7	136.5	157.0
36	MSU Line E5011	.	141.5	141.6	139.5	156.3
37	MSU Line E5024	.	142.0	135.4	140.0	155.7
38	MSU Line E6012	136	140.5	135.4	135.5	154.5
LOCATION MEANS		135.0	136.7	134.5	134.4	154.4

HEADING DATE (Julian Days)

		Columbia MO McKendry	Ithaca NY Sorrells	Plymouth NC Murphy	Wooster OH Sneller	Nairn ON Etienne
1	INW0411	132.3	150.0	103	146	155.7
2	Branson	131.7	149.7	103	145	156.3
3	Bess	132.3	151.0	105	147	158.3
4	Shirley	132.7	151.7	105	148	158.7
5	T171	133.3	151.0	108	148	159.0
6	MO 080104	131.7	151.0	103	147	157.7
7	OH05-200-74	134.3	151.3	108	148	159.0
8	IL04-24668	131.0	149.3	104	145	155.7
9	IL05-4236	133.0	148.7	101	145	155.0
10	TN902	133.0	150.7	105	146	155.7
11	NC05-19896	132.0	151.0	101	146	156.7
12	X08-18A3	131.7	151.0	104	144	155.0
13	X08-39D	133.3	151.7	106	148	159.3
14	G09408	131.7	150.3	104	146	158.0
15	G09419	131.3	149.0	103	146	156.3
16	G09607	133.3	149.7	106	147	156.3
17	IL06-14262	132.0	150.7	106	147	156.0
18	OH06-150-57	132.0	151.0	105	148	159.0
19	OH06-180-57	133.0	152.0	109	150	160.7
20	T177	131.3	149.3	102	145	155.7
21	T178	132.0	150.3	104	146	155.7
22	GA021087-9LE33	142.7	152.7	104	155	164.0
23	GA011446-9LE35	130.7	150.3	102	145	157.7
24	MH07-7483	136.3	152.3	109	149	159.3
25	MH07-7474	134.7	151.3	107	150	159.0
26	P04702A1-18	130.3	148.7	102	146	154.7
27	P0537A1-12	133.0	152.0	104	148	158.0
28	P06403A1-4	132.0	150.7	104	145	155.7
29	KY02C-3005-25	138.3	153.0	111	150	160.7
30	KY02C-3004-07	136.3	153.3	108	150	160.0
31	VA05W-251	132.7	151.3	104	149	159.0
32	VA08W-176	135.3	151.3	110	148	160.0
33	VA08W-294	133.7	151.3	104	148	159.0
34	TN1102	133.0	151.0	105	148	157.3
35	NC07-23880	134.0	152.0	106	152	161.3
36	MSU Line E5011	140.0	152.3	111	150	159.0
37	MSU Line E5024	137.0	153.0	112	149	159.3
38	MSU Line E6012	134.7	152.3	107	148	158.0
LOCATION MEANS		133.5	151.0	105.4	147.6	157.9

HEADING DATE (Julian Days)

		Knoxville TN West	Blacksburg VA Griffey	Warsaw VA Griffey	Oconto WI Murche
1	INW0411	116	124.5	117.0	158.3
2	Branson	113	129.5	117.0	157.0
3	Bess	115	127.5	119.5	158.3
4	Shirley	116	131.0	118.5	159.0
5	T171	117	129.0	119.5	159.0
6	MO 080104	115	129.5	119.0	159.0
7	OH05-200-74	118	124.0	121.0	159.0
8	IL04-24668	114	129.5	117.0	156.0
9	IL05-4236	114	127.5	117.0	156.0
10	TN902	115	127.5	117.5	158.3
11	NC05-19896	113	128.0	118.5	158.7
12	X08-18A3	114	130.5	117.0	157.7
13	X08-39D	116	126.0	121.0	159.0
14	G09408	115	127.0	119.0	159.0
15	G09419	113	129.5	117.0	158.7
16	G09607	116	128.0	119.0	157.7
17	IL06-14262	116	126.5	119.5	157.7
18	OH06-150-57	116	127.5	119.5	159.0
19	OH06-180-57	118	129.5	122.5	159.0
20	T177	112	129.0	118.0	157.3
21	T178	114	129.0	118.0	158.0
22	GA021087-9LE33	121	129.0	123.0	159.7
23	GA011446-9LE35	114	131.0	117.0	157.7
24	MH07-7483	118	129.5	121.0	159.0
25	MH07-7474	118	127.5	120.0	159.0
26	P04702A1-18	115	127.0	117.0	156.3
27	P0537A1-12	116	125.0	117.0	159.0
28	P06403A1-4	115	130.0	118.0	158.7
29	KY02C-3005-25	120	127.5	124.0	162.3
30	KY02C-3004-07	119	124.5	121.5	159.0
31	VA05W-251	113	129.5	119.0	159.0
32	VA08W-176	116	127.0	121.0	159.0
33	VA08W-294	112	126.0	119.0	159.0
34	TN1102	116	130.0	118.0	159.0
35	NC07-23880	116	131.5	122.0	159.0
36	MSU Line E5011	120	130.0	123.0	159.0
37	MSU Line E5024	119	128.5	120.5	159.3
38	MSU Line E6012	117	130.0	119.5	159.0
LOCATION MEANS		115.8	128.3	119.3	158.5

HEADING DATE (Julian Days)

ENTRY MEANS
ALL LOCATIONS

			rank
1	INW0411	131.2	5
2	Branson	130.2	1
3	Bess	132.1	13
4	Shirley	133.0	20
5	T171	133.7	25
6	MO 080104	132.7	15
7	OH05-200-74	135.5	30
8	IL04-24668	131.0	4
9	IL05-4236	130.8	3
10	TN902	131.7	11
11	NC05-19896	131.9	12
12	X08-18A3	131.3	7
13	X08-39D	132.8	18
14	G09408	133.1	22
15	G09419	131.6	10
16	G09607	132.8	17
17	IL06-14262	133.0	21
18	OH06-150-57	133.8	26
19	OH06-180-57	136.1	34
20	T177	130.6	2
21	T178	131.4	9
22	GA021087-9LE33	138.5	38
23	GA011446-9LE35	131.4	8
24	MH07-7483	135.5	31
25	MH07-7474	134.6	28
26	P04702A1-18	131.3	6
27	P0537A1-12	132.9	19
28	P06403A1-4	132.1	14
29	KY02C-3005-25	137.4	36
30	KY02C-3004-07	135.8	32
31	VA05W-251	133.4	24
32	VA08W-176	134.6	27
33	VA08W-294	132.8	16
34	TN1102	133.3	23
35	NC07-23880	135.9	33
36	MSU Line E5011	137.8	37
37	MSU Line E5024	136.2	35
38	MSU Line E6012	134.8	29
LOCATION MEANS		133.4	

HEIGHT (inches)

		Bay AR Hancock	Griffin GA Johnson	Brownstown IL Kolb	Urbana IL Kolb	Battle Ground IN Obert
1	INW0411	33.5	37	34	41	33
2	Branson	32.9	35	33	37	35
3	Bess	34.6	39	37	40	35
4	Shirley	33.9	36	32	37	31
5	T171	31.5	37	34	36	31
6	MO 080104	35.2	41	39	42	34
7	OH05-200-74	37.4	42	37	42	33
8	IL04-24668	34.3	40	34	39	33
9	IL05-4236	37.2	43	39	41	33
10	TN902	34.6	41	38	41	35
11	NC05-19896	33.7	35	33	35	30
12	X08-18A3	36.2	41	38	41	35
13	X08-39D	34.4	41	36	40	35
14	G09408	35.4	39	35	38	35
15	G09419	33.5	36	35	37	32
16	G09607	35.8	37	38	42	36
17	IL06-14262	36.4	40	37	40	36
18	OH06-150-57	35.8	42	36	40	37
19	OH06-180-57	34.1	39	38	41	37
20	T177	26.8	32	28	31	26
21	T178	27.4	33	30	31	27
22	GA021087-9LE33	36.8	38	38	38	34
23	GA011446-9LE35	33.5	36	35	38	34
24	MH07-7483	35.4	40	36	37	34
25	MH07-7474	36.4	38	38	43	34
26	P04702A1-18	32.5	36	34	38	32
27	P0537A1-12	37.0	39	35	37	34
28	P06403A1-4	31.9	37	32	38	32
29	KY02C-3005-25	34.8	42	38	38	37
30	KY02C-3004-07	33.1	36	34	37	32
31	VA05W-251	31.5	35	33	36	31
32	VA08W-176	33.5	41	34	38	34
33	VA08W-294	33.9	39	33	37	34
34	TN1102	34.8	41	39	40	37
35	NC07-23880	34.4	40	35	36	35
36	MSU Line E5011	35.4	38	35	36	35
37	MSU Line E5024	34.3	36	35	37	35
38	MSU Line E6012	33.7	39	36	39	35
LOCATION MEANS		34.1	38.3	35.3	38.3	33.6

HEIGHT (inches)

		Lafayette IN Moreno	Tipton IN Obert	W Lafayette IN Ohm	Schochoh KY Van Sanford	Clarksville MD Costa
1	INW0411	36	31	39.3	33.7	40.5
2	Branson	37	31	38.5	34.9	39.0
3	Bess	39	32	40.0	37.3	43.5
4	Shirley	31	30	35.5	30.3	39.0
5	T171	32	30	36.8	33.6	37.5
6	MO 080104	39	35	40.3	37.2	45.0
7	OH05-200-74	39	31	41.3	37.2	41.5
8	IL04-24668	40	28	38.5	35.2	40.5
9	IL05-4236	39	32	39.8	35.7	43.5
10	TN902	41	32	39.5	35.9	42.5
11	NC05-19896	36	32	35.3	31.7	36.0
12	X08-18A3	40	31	39.8	37.2	42.0
13	X08-39D	39	31	36.8	33.8	42.5
14	G09408	35	30	36.3	34.3	33.0
15	G09419	34	30	37.5	32.7	37.5
16	G09607	38	30	39.8	33.6	41.5
17	IL06-14262	38	29	39.5	34.4	42.0
18	OH06-150-57	39	28	39.8	35.7	42.5
19	OH06-180-57	38	28	39.0	36.6	38.5
20	T177	30	25	30.8	26.8	32.0
21	T178	32	24	31.3	27.5	32.0
22	GA021087-9LE33	35	32	36.8	39.9	32.0
23	GA011446-9LE35	36	33	36.5	35.2	40.0
24	MH07-7483	37	30	37.8	34.3	41.0
25	MH07-7474	38	32	40.8	37.1	39.5
26	P04702A1-18	36	29	36.8	33.9	37.5
27	P0537A1-12	38	30	37.3	34.6	42.0
28	P06403A1-4	35	38	34.0	28.4	36.5
29	KY02C-3005-25	38	31	38.8	37.9	43.0
30	KY02C-3004-07	34	27	35.0	33.0	36.5
31	VA05W-251	33	28	36.0	32.0	39.5
32	VA08W-176	37	29	38.3	35.7	41.0
33	VA08W-294	35	28	37.3	35.2	36.5
34	TN1102	38	31	40.0	36.8	43.0
35	NC07-23880	34	28	36.8	35.2	37.5
36	MSU Line E5011	36	28	37.0	34.8	37.5
37	MSU Line E5024	33	29	35.8	33.7	32.5
38	MSU Line E6012	37	28	37.5	35.8	39.0
LOCATION MEANS		36.4	30.0	37.5	34.4	39.1

HEIGHT (inches)

		Cleveland MS Hancock	Columbia MO McKendry	Clay Center NE Baenziger	Ithaca NY Sorrells	Napoleon OH Fogleman
1	INW0411	35.4	40	30.1	28.6	36.4
2	Branson	38.6	38	29.3	31.6	36.0
3	Bess	40.9	40	32.3	33.9	37.4
4	Shirley	35.0	38	29.8	28.7	33.1
5	T171	37.0	37	29.1	29.3	34.3
6	MO 080104	38.6	39	32.8	36.5	40.9
7	OH05-200-74	41.3	41	32.8	32.4	39.6
8	IL04-24668	37.4	36	31.1	32.8	38.0
9	IL05-4236	41.3	37	33.8	36.5	39.0
10	TN902	37.4	41	29.8	32.7	37.4
11	NC05-19896	35.8	36	29.1	28.6	35.0
12	X08-18A3	39.0	40	32.6	33.1	40.0
13	X08-39D	37.4	40	33.1	32.7	37.0
14	G09408	37.4	40	30.6	32.4	36.4
15	G09419	35.8	36	29.6	32.7	39.4
16	G09607	39.8	39	33.1	36.2	39.8
17	IL06-14262	39.0	41	33.3	35.6	40.7
18	OH06-150-57	40.6	40	33.8	33.3	38.2
19	OH06-180-57	37.4	39	31.3	34.1	40.0
20	T177	28.3	31	29.2	25.5	29.3
21	T178	30.3	33	29.4	25.2	29.1
22	GA021087-9LE33	39.8	37	29.9	27.2	36.6
23	GA011446-9LE35	36.6	40	32.2	30.1	35.0
24	MH07-7483	37.4	40	33.2	31.0	36.0
25	MH07-7474	38.2	40	31.2	32.9	40.4
26	P04702A1-18	37.0	37	28.7	31.2	33.9
27	P0537A1-12	37.4	40	31.9	31.2	37.2
28	P06403A1-4	35.0	37	30.9	28.2	32.9
29	KY02C-3005-25	38.2	39	35.2	32.9	38.2
30	KY02C-3004-07	35.4	35	32.7	29.9	36.4
31	VA05W-251	35.4	41	31.2	29.5	35.6
32	VA08W-176	39.4	40	30.9	30.3	35.0
33	VA08W-294	37.0	38	32.9	31.0	34.4
34	TN1102	38.2	40	32.9	35.0	40.4
35	NC07-23880	39.0	39	32.9	30.1	35.4
36	MSU Line E5011	37.4	37	31.7	28.9	36.2
37	MSU Line E5024	35.4	37	32.4	29.8	34.1
38	MSU Line E6012	36.6	38	30.2	31.6	35.4
LOCATION MEANS		37.3	38.3	31.5	31.4	36.6

HEIGHT (inches)

		Wooster OH Sneller	Nairn ON Etienne	Knoxville TN West	Blacksburg VA Griffey	Warsaw VA Griffey
1	INW0411	31	27.2	36	39.0	32.0
2	Branson	34	28.3	35	42.5	32.0
3	Bess	36	29.1	38	38.5	31.5
4	Shirley	32	27.2	32	42.5	29.5
5	T171	33	25.6	36	40.0	29.5
6	MO 080104	39	29.1	44	40.5	33.0
7	OH05-200-74	39	31.5	38	41.5	33.5
8	IL04-24668	34	26.8	36	41.0	31.5
9	IL05-4236	37	28.7	40	39.5	33.5
10	TN902	37	28.3	39	35.5	34.0
11	NC05-19896	33	25.6	33	40.0	29.0
12	X08-18A3	38	28.3	39	43.5	33.5
13	X08-39D	36	29.1	36	43.5	33.0
14	G09408	32	28.0	36	39.5	31.0
15	G09419	34	27.2	37	39.5	28.0
16	G09607	34	26.8	42	39.5	34.0
17	IL06-14262	35	30.3	39	38.5	32.0
18	OH06-150-57	34	29.9	40	41.0	33.5
19	OH06-180-57	35	28.7	40	42.5	31.5
20	T177	26	22.8	30	42.0	23.5
21	T178	26	23.2	30	40.5	25.0
22	GA021087-9LE33	33	33.9	37	40.0	32.0
23	GA011446-9LE35	33	28.0	37	41.0	32.0
24	MH07-7483	33	27.2	38	40.5	33.5
25	MH07-7474	35	31.1	40	39.5	34.5
26	P04702A1-18	33	27.6	36	42.0	30.5
27	P0537A1-12	35	30.3	37	39.0	32.0
28	P06403A1-4	32	23.6	35	44.5	29.0
29	KY02C-3005-25	35	30.7	38	41.0	33.0
30	KY02C-3004-07	34	28.0	35	42.0	28.0
31	VA05W-251	33	26.8	33	36.5	31.0
32	VA08W-176	35	29.5	38	41.5	30.0
33	VA08W-294	35	29.1	37	39.0	31.0
34	TN1102	37	33.5	39	40.5	33.0
35	NC07-23880	33	28.7	33	42.0	30.5
36	MSU Line E5011	34	25.6	35	41.5	31.5
37	MSU Line E5024	33	26.8	34	37.0	29.5
38	MSU Line E6012	35	29.5	38	40.0	31.5
LOCATION MEANS		34.0	28.2	36.7	40.5	31.2

HEIGHT (inches)

		Arlington WI Martinka	Oconto WI Murche	ENTRY MEANS ALL LOCATIONS	rank
1	INW0411	32.7	35.0	34.7	23
2	Branson	30.7	34.0	34.7	22
3	Bess	33.3	35.0	36.5	10
4	Shirley	26.0	29.5	32.7	36
5	T171	30.3	29.0	33.2	33
6	MO 080104	31.7	35.5	37.6	1
7	OH05-200-74	29.0	35.0	37.1	4
8	IL04-24668	31.7	33.5	35.1	18
9	IL05-4236	30.0	36.0	37.1	5
10	TN902	30.7	34.0	36.2	12
11	NC05-19896	27.0	31.0	32.8	35
12	X08-18A3	31.7	36.5	37.1	3
13	X08-39D	30.3	35.0	36.0	14
14	G09408	29.0	34.5	34.4	26
15	G09419	28.0	32.0	33.8	28
16	G09607	31.0	37.0	36.5	9
17	IL06-14262	30.0	35.5	36.5	11
18	OH06-150-57	32.7	35.0	36.7	7
19	OH06-180-57	32.3	35.0	36.2	13
20	T177	25.3	27.0	28.6	38
21	T178	26.7	28.5	29.2	37
22	GA021087-9LE33	29.3	33.5	35.0	19
23	GA011446-9LE35	31.7	35.0	34.9	21
24	MH07-7483	32.3	35.0	35.4	15
25	MH07-7474	31.7	34.5	36.6	8
26	P04702A1-18	30.3	30.5	33.8	29
27	P0537A1-12	30.0	34.0	35.4	16
28	P06403A1-4	30.0	31.0	33.3	31
29	KY02C-3005-25	32.0	37.0	36.8	6
30	KY02C-3004-07	28.7	31.5	33.4	30
31	VA05W-251	26.0	32.5	33.0	34
32	VA08W-176	31.3	35.0	35.3	17
33	VA08W-294	31.7	34.0	34.5	25
34	TN1102	29.7	39.5	37.2	2
35	NC07-23880	29.7	34.0	34.5	24
36	MSU Line E5011	29.3	32.0	34.2	27
37	MSU Line E5024	29.7	31.0	33.2	32
38	MSU Line E6012	30.3	33.0	35.0	20
LOCATION MEANS		30.1	33.6	34.8	

LODGING

		Griffin GA Johnson %	W Lafayette IN Ohm Straw Score 0-9	Clarksville MD Costa 0-9	Columbia MO McKendry 0-9	Knoxville TN West 0-9
1	INW0411		5.0	1.5	2.3	3.0
2	Branson		5.0	2.0	2.7	3.0
3	Bess		5.0	3.0	3.7	4.0
4	Shirley		5.5	3.5	2.3	3.0
5	T171		5.0	1.0	4.0	3.0
6	MO 080104	30	5.5	1.5	3.0	6.0
7	OH05-200-74		5.0	0.0	4.7	3.0
8	IL04-24668		5.0	1.5	2.7	4.0
9	IL05-4236	20	5.0	1.5	4.0	4.0
10	TN902	15	5.0	2.5	2.7	5.0
11	NC05-19896	20	5.0	3.0	2.0	5.0
12	X08-18A3		5.0	1.0	3.7	6.0
13	X08-39D		5.0	4.0	4.0	4.0
14	G09408	20	6.0	2.0	4.0	5.0
15	G09419	15	5.0	1.0	4.7	5.0
16	G09607	15	5.5	1.5	4.7	6.0
17	IL06-14262	70	5.5	3.0	4.3	4.0
18	OH06-150-57	20	5.0	0.5	3.0	4.0
19	OH06-180-57	40	4.0	0.0	3.7	4.0
20	T177		4.0	2.5	2.7	4.0
21	T178		4.5	4.5	4.3	3.0
22	GA021087-9LE33		5.0	0.0	2.3	3.0
23	GA011446-9LE35		5.0	0.0	3.3	4.0
24	MH07-7483		5.0	2.0	3.7	3.0
25	MH07-7474		5.0	1.0	3.3	4.0
26	P04702A1-18		5.0	0.0	3.0	4.0
27	P0537A1-12		5.0	1.5	3.3	4.0
28	P06403A1-4		4.0	1.5	2.0	3.0
29	KY02C-3005-25		5.0	6.5	5.7	5.0
30	KY02C-3004-07		5.0	1.0	4.3	3.0
31	VA05W-251		5.0	3.5	4.0	4.0
32	VA08W-176		5.0	3.5	4.7	4.0
33	VA08W-294		5.0	0.5	3.0	4.0
34	TN1102		5.0	0.0	3.7	4.0
35	NC07-23880	30	5.5	3.5	4.3	6.0
36	MSU Line E5011		5.0	2.5	3.7	2.0
37	MSU Line E5024		5.0	1.0	3.3	3.0
38	MSU Line E6012		5.0	3.5	4.7	5.0
LOCATION MEANS			5.0	1.9	3.6	4.0

LODGING

		Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9	Arlington WI Martinka 0-9	Oconto WI Murche 0-9
1	INW0411	1.5	0.5	0.2	0.0
2	Branson	3.0	1.0	0.2	1.0
3	Bess	3.0	0.5	0.2	1.7
4	Shirley	3.0	0.0	0.2	0.0
5	T171	5.0	0.0	0.2	0.3
6	MO 080104	3.0	0.5	0.2	0.3
7	OH05-200-74	2.5	0.5	0.2	0.3
8	IL04-24668	4.5	1.0	0.2	0.0
9	IL05-4236	0.5	0.5	0.5	0.7
10	TN902	1.0	1.0	0.2	0.3
11	NC05-19896	2.0	0.0	0.2	0.3
12	X08-18A3	3.5	1.0	0.2	0.3
13	X08-39D	1.0	1.0	0.2	0.3
14	G09408	1.5	0.5	0.2	2.0
15	G09419	1.5	1.0	0.2	0.7
16	G09607	1.5	2.0	0.2	0.0
17	IL06-14262	3.0	0.0	0.2	0.7
18	OH06-150-57	1.0	0.0	0.2	0.0
19	OH06-180-57	0.5	0.0	0.2	0.0
20	T177	1.0	0.0	0.2	0.7
21	T178	0.5	0.0	0.2	2.3
22	GA021087-9LE33	2.5	0.0	0.2	0.0
23	GA011446-9LE35	2.5	0.0	0.2	0.0
24	MH07-7483	4.5	0.0	0.2	0.0
25	MH07-7474	3.5	0.5	0.2	0.0
26	P04702A1-18	2.0	0.0	0.2	0.0
27	P0537A1-12	2.5	0.0	0.2	0.0
28	P06403A1-4	0.5	0.0	0.2	0.0
29	KY02C-3005-25	1.0	0.0	0.2	2.0
30	KY02C-3004-07	0.5	0.0	0.2	0.0
31	VA05W-251	0.0	0.5	0.2	1.0
32	VA08W-176	3.0	0.5	0.2	0.0
33	VA08W-294	0.0	0.0	0.2	0.7
34	TN1102	1.5	0.0	0.2	0.7
35	NC07-23880	2.0	0.0	0.2	1.0
36	MSU Line E5011	1.0	0.0	0.2	0.0
37	MSU Line E5024	0.5	0.0	0.2	0.0
38	MSU Line E6012	1.0	0.0	0.4	1.3
LOCATION MEANS		1.9	0.3	0.2	0.5

WINTER DAMAGE

		Lafayette IN Moreno Stand 0-9	Clay Center NE Baenziger survival 0-10	Ithaca NY Sorrells winter kill 0-9	Nairn ON Etienne winter kill 0-9	Oconto WI Murche winter kill 0-9
1	INW0411	3	9.0	1	1.0	1.3
2	Branson	2	10.0	1	1.4	0.3
3	Bess	2	10.0	0	1.4	0.7
4	Shirley	6	10.0	3	1.4	2.0
5	T171	4	10.0	1	1.4	1.0
6	MO 080104	2	10.0	1	1.5	1.0
7	OH05-200-74	2	10.0	0	1.4	3.0
8	IL04-24668	2	10.0	1	1.1	0.0
9	IL05-4236	4	10.0	1	1.1	0.3
10	TN902	2	10.0	2	0.9	2.3
11	NC05-19896	3	9.5	1	1.6	2.7
12	X08-18A3	2	10.0	1	1.2	1.7
13	X08-39D	3	10.0	0	1.0	0.3
14	G09408	4	8.8	2	1.4	1.3
15	G09419	5	9.5	1	0.9	2.0
16	G09607	2	10.0	2	1.4	1.7
17	IL06-14262	2	10.0	0	1.3	0.7
18	OH06-150-57	4	8.5	0	1.4	5.7
19	OH06-180-57	2	10.0	0	1.4	2.3
20	T177	2	10.0	1	1.1	1.0
21	T178	2	10.0	0	1.5	1.7
22	GA021087-9LE33	5	5.0	5	1.6	5.3
23	GA011446-9LE35	2	10.0	0	1.0	2.3
24	MH07-7483	3	10.0	1	1.5	1.3
25	MH07-7474	2	9.5	1	1.0	1.3
26	P04702A1-18	2	8.0	3	1.0	6.3
27	P0537A1-12	3	9.3	4	1.1	2.7
28	P06403A1-4	4	9.5	2	0.9	2.3
29	KY02C-3005-25	4	10.0	0	1.3	2.0
30	KY02C-3004-07	2	10.0	1	0.6	2.3
31	VA05W-251	2	10.0	0	0.7	1.3
32	VA08W-176	2	10.0	1	1.4	1.3
33	VA08W-294	4	10.0	0	1.0	2.0
34	TN1102	3	10.0	2	1.2	0.3
35	NC07-23880	2	10.0	1	1.0	2.3
36	MSU Line E5011	2	10.0	4	0.7	0.7
37	MSU Line E5024	5	10.0	2	0.8	2.0
38	MSU Line E6012	3	10.0	0	1.4	1.7
LOCATION MEANS		2.9	9.6	1.2	1.2	1.9

LEAF RUST

		DeKalb IL Kolb 0-9	Battle Ground IN Obert 0-9	Delphi IN Fogleman 0-9	St. Paul MN Kolmer sev / it	Plymouth NC Murphy 0-9
1	INW0411	2.0	8	1	10M	5
2	Branson	3.0	7	1	20M	3
3	Bess	4.0	8	1	40S	6
4	Shirley	2.5	1	1	TR	0
5	T171	3.5	6	7	40MS	7
6	MO 080104	7.5	5	2	50S	3
7	OH05-200-74	5.5	6	3	50MRMS	6
8	IL04-24668	4.5	3	1	30MRMS	4
9	IL05-4236	4.5	5	7	60S	6
10	TN902	3.0	4	2	60MS	4
11	NC05-19896	1.0	5	1	TR	1
12	X08-18A3	2.5	3	2	TR	1
13	X08-39D	3.0	2	2	20M	2
14	G09408	3.5	5	2	40MS	6
15	G09419	3.0	5	6	20M	5
16	G09607	4.0	4	1	60MS	4
17	IL06-14262	5.0	5	1	30MRMS	3
18	OH06-150-57	2.5	4	1	---	2
19	OH06-180-57	3.5	6	5	50MS	4
20	T177	6.0	6	2	30MS	5
21	T178	5.0	8	3	30S	6
22	GA021087-9LE33	1.5	3	2	TR	0
23	GA011446-9LE35	1.0	4	3	TR	0
24	MH07-7483	2.5	7	2	20MRMS	6
25	MH07-7474	2.0	7	2	30MRMS	5
26	P04702A1-18	1.0	3	3	TR	1
27	P0537A1-12	4.5	6	3	30MRMS	2
28	P06403A1-4	1.5	3	2	20M	2
29	KY02C-3005-25	1.0	2	2	20MS	0
30	KY02C-3004-07	2.5	1	3	40MS	0
31	VA05W-251	3.0	5	4	20MRMS	0
32	VA08W-176	2.0	1	2	5R	0
33	VA08W-294	1.0	3	2	5MR	0
34	TN1102	3.0	7	6	50MS	5
35	NC07-23880	1.0	4	2	10S	0
36	MSU Line E5011	7.0	7	7	40MSS	5
37	MSU Line E5024	3.0	3	2	60S	4
38	MSU Line E6012	6.0	6	7	50MS	6
LOCATION MEANS		3.2	4.7	2.8		3.1
DATE / GROWTH STAGE		11.2	June 6			

LEAF RUST

		Wooster OH Sneller 0-9	Nairn ON Etienne 0-9	Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9	Arlington WI Martinka 0-9
1	INW0411	0.0	2.3	5.5	3.0	3.0
2	Branson	0.0	0.7	5.0	5.0	3.3
3	Bess	0.0	5.3	5.0	6.0	3.7
4	Shirley	0.0	0.3	6.5	0.0	1.7
5	T171	0.0	5.3	4.0	8.0	2.3
6	MO 080104	0.0	3.3	7.0	3.0	5.3
7	OH05-200-74	4.5	5.3	0.5	8.0	4.0
8	IL04-24668	0.0	3.0	0.5	7.0	6.7
9	IL05-4236	0.0	6.3	4.5	7.0	5.7
10	TN902	0.0	2.0	8.5	3.0	5.3
11	NC05-19896	0.0	0.3	9.0	2.0	2.3
12	X08-18A3	0.0	0.0	4.5	0.0	6.0
13	X08-39D	0.0	0.0	6.5	3.0	3.0
14	G09408	0.0	5.3	0.5	5.5	1.7
15	G09419	0.0	5.0	5.0	4.0	3.3
16	G09607	0.0	3.7	3.5	2.0	3.0
17	IL06-14262	0.0	1.0	5.5	3.5	3.7
18	OH06-150-57	0.0	1.0	6.5	1.5	2.3
19	OH06-180-57	1.0	5.0	7.0	4.5	4.3
20	T177	0.0	5.7	7.0	4.0	4.0
21	T178	0.0	6.7	7.5	8.5	4.3
22	GA021087-9LE33	0.0	0.0	1.0	0.0	4.0
23	GA011446-9LE35	0.0	0.0	7.0	0.0	1.7
24	MH07-7483	0.0	2.3	7.5	5.0	3.3
25	MH07-7474	0.0	1.3	5.0	3.5	3.7
26	P04702A1-18	0.0	0.0	4.5	0.0	2.0
27	P0537A1-12	2.0	4.0	5.5	5.0	5.0
28	P06403A1-4	0.0	0.7	3.5	0.0	3.7
29	KY02C-3005-25	0.0	0.0	8.0	0.5	3.0
30	KY02C-3004-07	0.0	0.7	4.5	0.0	2.7
31	VA05W-251	0.0	0.3	7.5	0.5	2.3
32	VA08W-176	0.0	0.3	3.0	0.5	2.7
33	VA08W-294	0.0	0.3	1.0	0.0	2.0
34	TN1102	1.0	4.3	5.0	5.5	3.0
35	NC07-23880	0.0	0.3	3.5	0.0	2.0
36	MSU Line E5011	0.0	3.0	8.5	6.5	3.0
37	MSU Line E5024	0.0	1.0	7.5	5.0	3.0
38	MSU Line E6012	3.0	5.7	6.0	8.0	4.0
LOCATION MEANS		0.3	2.4	5.2	3.4	3.4
DATE / GROWTH STAGE						

LEAF RUST

		Oconto WI Murche 0-9	ENTRY MEANS (excluding St. Paul)
1	INW0411	6.5	3.6
2	Branson	0.8	2.9
3	Bess	7.5	4.6
4	Shirley	0.0	1.3
5	T171	7.5	5.1
6	MO 080104	4.3	4.0
7	OH05-200-74	6.0	4.9
8	IL04-24668	2.5	3.2
9	IL05-4236	4.0	5.0
10	TN902	0.5	3.2
11	NC05-19896	0.5	2.2
12	X08-18A3	3.5	2.3
13	X08-39D	0.0	2.2
14	G09408	7.3	3.7
15	G09419	3.5	4.0
16	G09607	4.8	3.0
17	IL06-14262	6.0	3.4
18	OH06-150-57	2.0	2.3
19	OH06-180-57	5.8	4.6
20	T177	6.0	4.6
21	T178	8.8	5.8
22	GA021087-9LE33	0.0	1.2
23	GA011446-9LE35	0.0	1.7
24	MH07-7483	4.8	4.0
25	MH07-7474	4.8	3.4
26	P04702A1-18	0.0	1.5
27	P0537A1-12	4.3	4.1
28	P06403A1-4	3.0	1.9
29	KY02C-3005-25	0.0	1.7
30	KY02C-3004-07	0.0	1.4
31	VA05W-251	0.0	2.3
32	VA08W-176	0.0	1.1
33	VA08W-294	0.0	0.9
34	TN1102	8.0	4.8
35	NC07-23880	0.0	1.3
36	MSU Line E5011	7.8	5.5
37	MSU Line E5024	1.0	3.0
38	MSU Line E6012	7.5	5.9
LOCATION MEANS		3.4	3.2
DATE / GROWTH STAGE			

LEAF RUST

Seedling reaction of entries of the 2010-2011 Uniform Eastern Soft Red Winter Wheat Nursery to selected isolates of *Puccinia triticina* (D.L. Long, USDA-ARS-CDL, St. Paul, MN)									Virginia Tech Seedling Reaction to Leaf Rust	
		Reactions produced by Pt race*						Postulated		TCRK +
No.	Cultivar or line	TCRK*	TFBJ	TDBJ	MCTS	TNGJ	TNRJ	genes***	TNRJ	MFQS
1	INW0411	3	;	;	3;	;/c2	;	11,26	0;	Tr3
2	Branson	3	3	3	;	3	;/c	2a	3	23
3	Bess	3	3	3	3	3	3	-	3	3
4	Shirley	2c;	;	;	;	;/c	;	+	0;	;1
5	T171	;	;/c	;/c	;2/c	;2	;/c	+	;1-	0;
6	MO 080104	3	;-3	;/c-3	3	3	3	-	3	3
7	OH05-200-74	3	3	;	3-;	;-3	;	26	23	23
8	IL04-24668	3	3	;3	3	;1c	;/c	26	3	23;
9	IL05-4236	3	;-3	;/c	3	3	3	11	3	3
10	TN902	3	3	;	3	;	;	26	;1	3;
11	NC05-19896	3	;	;/c	;	;	;	18,26	;1	0;
12	X08-18A3	3-;/c	3	3;	3-;	/c2	;3	+	;1	23;
13	X08-39D	3	;	;	3	3	3;	11	3	3
14	G09408	3	;3	;	3	3	3	11	3	3
15	G09419	3	3	3	-	3	3	-	3	3
16	G09607	3	3	3	3	3	3	-	;1	3/0;
17	IL06-14262	3	3	3	3	3	3	-	3	3-
18	OH06-150-57	3	3	3	3	3	3	-	;1	23;
19	OH06-180-57	3	3	3	3	3	3	-	3/0;	3
20	T177	3	3	3;	-	3	-	-	3;	23;
21	T178	3	3	3	3	3	3	-	3	3
22	GA021087-9LE33	;/c	;/c2	;/c1	;/	/c;	;	+	-	12;
23	GA011446-9LE35	;/c	;/c	;3	-	;/c	;	+	;1=	23;
24	MH07-7483	3	3	;	3	;/c2	;	26	0;	3;
25	MH07-7474	-	3;	;	3	;/c2-3	-	26	3	3
26	P04702A1-18	3	;	;	3	;/c	;	11,26	0;	23;
27	P0537A1-12	3	3;	3	;3	3	3	-	3	3;
28	P06403A1-4	;	;/c1	;/c	;/c1	;/c	;/c	+	0;	;1-
29	KY02C-3005-25	;	3-;	;/c	;	;/c-3	;	+	3/0;	3
30	KY02C-3004-07	;	;	;	;	3	;	+	3	NA
31	VA05W-251	;	;-3	;	;	3	-	+	23	;1-
32	VA08W-176	;	3	3	;	3	;-3	24	3	3
33	VA08W-294	;-3	;	;/c	;	3-;	;	+	23	0;
34	TN1102	3	3	3	3	3	3	-	3	NA
35	NC07-23880	;	;	;	;	3	;	+	23	NA
36	MSU Line E5011	3	3	;/	;-3	;/c	;	26	3	NA
37	MSU Line E5024	3	3	3	3	3	3	-	;1	NA
38	MSU Line E6012	3	;-3	;	3	3	3	11	3	3

*Single genes tested: = 1,2a,2c,3,3Ka,9,10,11,14a,16,17,18,24,26,30,B

**Virulence formula:

TCRK=1,2a,2c,3,3ka,10,11,14a,18,26,30

TFBJ=1,2a,2c,3,10,14a,24,26

TDBJ=1,2a,2c,3,10,14a,24

MCTS=1,3,3ka,10,11,14a,17,30,B

TNGJ=1,2a,2c,3,9,10,11,14a,24

TNRJ=1,2a,2c,3,3ka,9,10,11,14a,24,30

***+ = Lr gene(s) present but unable to identify with these Lr virulence combinations

MFQS=Lr1, 3, 3ka, 10, 11, 14a, 24, 26, B

STEM RUST

		DeKalb IL Kolb 0-9
1	INW0411	1.0
2	Branson	1.0
3	Bess	1.0
4	Shirley	1.0
5	T171	1.0
6	MO 080104	4.0
7	OH05-200-74	1.0
8	IL04-24668	1.0
9	IL05-4236	3.5
10	TN902	1.0
11	NC05-19896	1.0
12	X08-18A3	1.0
13	X08-39D	1.0
14	G09408	1.0
15	G09419	1.0
16	G09607	1.0
17	IL06-14262	2.5
18	OH06-150-57	1.0
19	OH06-180-57	3.0
20	T177	1.0
21	T178	1.0
22	GA021087-9LE33	1.0
23	GA011446-9LE35	1.0
24	MH07-7483	1.5
25	MH07-7474	1.0
26	P04702A1-18	1.0
27	P0537A1-12	3.0
28	P06403A1-4	1.0
29	KY02C-3005-25	1.0
30	KY02C-3004-07	1.0
31	VA05W-251	2.5
32	VA08W-176	1.0
33	VA08W-294	1.0
34	TN1102	1.0
35	NC07-23880	1.0
36	MSU Line E5011	3.0
37	MSU Line E5024	1.5
38	MSU Line E6012	4.0
LOCATION MEANS		1.5
DATE / GROWTH STAGE		11.2

St. Paul MN Jin

STEM RUST

		QFCSC	QTHJC	MCCFC	RCRSC	RKQQC	TPMKC	TTTTF	SCCSC	QCCSM	Bulk	TTKSK	TTKSK-rep2	TTKST	TTTSK	TRTTF	Postulated	St Paul field	Stem rust	Notes/comments
		06ND76C	75ND717C	59KS19	77ND82A	99KS76A-1	74MN1409	01MN84A-1-2	09ID73-2	75WA165-2A		04KEN156/04	04KEN156/04	06KEN19V3	07KEN24-4	06YEM34-1	Gene	10/11#		
Local ck	**McNair 701**	4	4	4	4	4	4	4	4	4		4	3+	4	4	4		**1074**	80S	
Local ck	**Red Chief**	2+	2+3	4	22+	3+	4	4	23	2+3		4/2N?	2+3	2+3	2+3	4		**1075**	60S	
1	INW0411	0	0	0	0	;2-	2	0	0	0		0/2	0/2-	;1	3+	2;	Sr36	**1076**	0	
2	Branson	2	3	22+	3	4	3	4	2	2		4						**1077**	70S	
3	Bess	4	3+	3+	3+	3+	4	4	3+	3+		4						**1078**	70MS-S	
4	Shirley	0;	0	0	;	;2-	;	2-	0	0		0	0	0;	4	2-	Sr36	**1079**	**10MR**	
5	T171	2-	3	22+	3	4	2+	3	2	2		4						**1080**	**80S**	
6	MO 080104	4	3+	4	3	4	4	4	4	4		3+						**1081**	90S	
7	OH05-200-74	;	2	0	0	;	0/4	2-	0	;		2	2	2	2-	3+	1A.1R	**1082**	20MR	
8	IL04-24668	2	4	2	3	4	3	4	2	2		4						**1083**	80S	
9	IL05-4236	3+	4	4	3+	3/2	4	4	4	3-		4						**1084**	90S	
10	TN902	2	2	2/4	2-	2-	2	2-	2	;2-/3		2+/3+	2+	3 LIF	2+3	2		**1085**	40MR-MS/80S	
11	NC05-19896	0	0	0	2+	;3-	3,2	3,2	0/2-	0		3						**1086**	TR	
12	X08-18A3	4	4	4	4	4/;13	4	4	4	0		4						**1087**	40S (on node)	
13	X08-39D	3+	22+	3+	4	4	4	3	3+/2	32		4						**1088**	80S	
14	G09408	0	0	0/2	3+	4	3	4	0/3	0		0	0	0	3+	3	Sr36	**1089**	30MR-MS	
15	G09419	0/2+	0	0	3+	3 LIF	3;	3+	0	0		0	0	0	4	3	Sr36	**1090**	10MR	BIN
16	G09607	3+	4	3+	3+	3+	4	4	3	4		4						**1091**	70S	
17	IL06-14262	3+	4	3+	4	4/2+	4	3	3+	3-		3						**1092**	70S	
18	OH06-150-57	4	4	4	4	;3	4	4	4	;		4						**1093**	missing	
19	OH06-180-57	2/4	2/4	2-/4	3+/2-	3/;	4/2	2/4	;	4		4						**1094**	60MS-S	
20	T177	0	0	0	3 LIF	0	0	3+ LIF	0	0		0	0	0	3+	3-	Sr36	**1095**	5R	
21	T178	0	0	0	3 LIF	3	4	4	0	0		0	0	0	4	3+	Sr36	**1096**	10MR	
22	GA021087-9LE33	0;	;	-	;	0	;	;	;	0;		4/;	4	-	-	2		**1097**	TR	BIN
23	GA011446-9LE35	0;	4	;13	4	;13	3;	4	0;	0		4						**1098**	TR	
24	MH07-7483	2	2	;	1	;1	2	2-	2-	;		4						**1099**	40MR	
25	MH07-7474	2-	4	;N	3	4		3	-	;1N		4						**1100**	60MS	
26	P04702A1-18	0	0	0	3	;	3+;	;3	0	0		0	0	;1	0	3	Sr36+	**1101**	TR	
27	P0537A1-12	4	4	3+	3+	3	4	4	4	4		4						**1102**	70S	
28	P06403A1-4	0	0	0	0	;	0;	0	0	0		4						**1103**	TR	
29	KY02C-3005-25	2	2	0;	2/4	2/3	2	2-	2-	2-		;2-/4	0	0	1 LIF	2/3	?	**1104**	20MR/50MS	
30	KY02C-3004-07	2-	2-	2-	2-	2-	2-	2-	0	2		-	2/4	0/2	2	2	?	**1105**	50MS	
31	VA05W-251	4	4	4	4	4	4	4	4	4		4						**1106**	60S	
32	VA08W-176	2-	2	;/3	2/4	2	2	2-/4	2-	0/2		;	2	2 LIF	-	2-	?	**1107**	20MR	
33	VA08W-294	2	2	2-	2-	2-	2	2-/4	2	2-		2	2	2	2 LIF	3+	1A.1R	**1108**	20MR-MS	
34	TN1102	2/0	0/3	0	4	4	3/2		0	2-		-	4	4	4	3-		**1109**	50MS	
35	NC07-23880	0	0	;	4	4/;	4	4	;	0		2;	2-;	0	3	3	Sr36	**1110**	60S	
36	MSU Line E5011	2-	2-	;	2-	2-	2-	;2-	2-	;		4						**1111**	20MR	
37	MSU Line E5024	4	4	4	4	4	4	4	4	4		3+						**1112**	80S	

STEM RUST

		QFCSC	QTHJC	MCCFC	RCRSC	RKQQC	TPMKC	TTTTF	SCCSC	QCCSM	Bulk	TTKSK	TTKSK-rep2	TTKST	TTTSK	TRTTF	Postulated	St Paul field	Stem rust	Notes/comments
		06ND76C	75ND717C	59KS19	77ND82A	99KS76A-1	74MN1409	01MN84A-1-2	09ID73-2	75WA165-2A		04KEN156/04	04KEN156/04	06KEN19V3	07KEN24-4	06YEM34-1	Gene	10/11#		
38	MSU Line E6012	4	4		4	4	4	4	4	4		4						**1113**	90S	
Local ck	**McNair 701**	4	4	4	4	4	4	4	4	4		4	4	4	4	4		**1114**	90S	
Local ck	**Red Chief**	2+	2+	3+	2+3	3	4	4/2	2+	2+		2+	2+3	2+	2+3	4		**1115**	60S	

Notes and explanations for seedling testing:

Bulk: a composite of US races used in seedling test: MCCFC, QFCSC, QTHJC, RCRSC, RKQQC, TPMKC, TTTTF
for updated race nomenclature, please refer to: Jin et al. 2008 Plant Dis. 92:923-926.

Ratings: "S" denotes susceptible infection type (IT) 3 or 4.
"/" denotes hetergeneous, the predominant type given first.
"LIF" denotes low infection frequency, or fewer number of pustules.
"C" stands for excessive chlorosis
"N" stands for excessive necrosis

Gene postulations are tentative and done for genes effective against TTKSK (Ug99) only. No attempt was made to postulate other Sr genes.
Users are advised to confirm with available markers.
"Sr2 mosaic" was referred to seedling chlorosis, similar to Sr2 expression in seedling under certain environments

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).
TRTTF (a race with 1A.1R virulence, not in the TTKS lineage) was also used in the repeated tests

Avirulence/virulence formula of stem rust races used in screening:

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
QFCSC	6 7b 9b 9e 11 24 30 31 36 38 Tmp	5 8a 9a 9d 9g 10 17 21 McN
QTHJC	7b 9a 9e 24 30 31 36 Tmp	5 6 8a 9b 9d 9g 10 11 17 21 38 McN
RCRSC	6 8a 9e 11 24 30 31 Tmp	5 7b 9a 9b 9d 9g 10 17 21 38 McN
RKQQC	9e 10 11 17 24 30 31 38 Tmp	5 6 7b 8a 9a 9b 9d 9g 21 McN
SCCSC	6 7b 8a 9b 11 24 30 31 36 38 Tmp	5 9a 9d 9e 9g 10 17 21 McN
TPMKC	6 9a 9b 24 30 31 38	5 7b 8a 9a 9d 9e 9g 10 11 17 21 36 Tmp McN
TTTTF	24 31	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 36 38 McN
TTKSK	24 36 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 31 38 McN
TTKST	36 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 24 30 31 38 McN
TTTSK	24 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 31 36 38 McN
TRTTF	8a 24 31	5 6 7b 9a 9b 9d 9e 9g 10 11 17 21 30 36 38 McN + 1A.1R

Notes and explanations for field testing:

Bulk: a composite of six US races used in seedling test: MCCFC, QFCSC, QTHJC, RCRSC, RKQQC, TPMKC
Field was inoculated by injection and by spray inoculation using the above bulk.

Ratings: Field notes were given in two parts: percent of disease and infection response
R-resistant; MR-moderately resistant; MS-moderately susceptible; S-susceptile.
"/" denotes hetergeneous, the predominant type given first.
BIN = black internode, a phenotypic marker for Sr2
PBC = pseudo black chaff, a phenotypic marker for Sr2

STRIPE RUST

		Griffin GA Johnson 0-9	Battle Ground IN Obert 0-9	Laurel Springs NC Marshall IT	Laurel Springs NC Marshall %	Nairn ON Etienne 0-9	Oconto WI Murche 0-9
1	INW0411	8	1	8	90	6.7	0.0
2	Branson	0	3	1	5	5.3	0.0
3	Bess	1	2	5	30	4.7	0.0
4	Shirley	9	3	9	90	4.0	1.0
5	T171	0	6	2	5	5.3	0.0
6	MO 080104	5	3	3	5	5.3	0.0
7	OH05-200-74	7	4	7	65	6.7	5.0
8	IL04-24668	9	5	9	90	6.7	5.0
9	IL05-4236	3	6	7	50	6.3	3.0
10	TN902	9	4	9	90	5.0	1.5
11	NC05-19896	1	2	1	1	3.7	0.0
12	X08-18A3	0	2	1	5	5.0	0.0
13	X08-39D	0	3	3	10	4.3	0.0
14	G09408	8	3	9	90	4.3	0.0
15	G09419	5	3	9	90	5.3	0.0
16	G09607	9	4	9	90	5.3	1.0
17	IL06-14262	5	3	7	20	4.3	0.0
18	OH06-150-57	0-5	3	3	5	3.7	1.0
19	OH06-180-57	4	1	3	5	4.3	0.0
20	T177	3	1	5	20	7.7	0.0
21	T178	6	3	8	60	7.0	0.0
22	GA021087-9LE33	0	2	1	5	2.0	0.0
23	GA011446-9LE35	0	3	1	5	3.7	0.0
24	MH07-7483	2	2	2	5	3.7	0.0
25	MH07-7474	0	2	1	5	3.3	0.0
26	P04702A1-18	0	3	1	1	4.3	0.0
27	P0537A1-12	0	4	3	5	4.7	0.0
28	P06403A1-4	0	2	3	5	5.3	2.0
29	KY02C-3005-25	7	1	8	90	3.0	0.0
30	KY02C-3004-07	9	2	9	90	4.7	1.5
31	VA05W-251	8	3	9	80	3.7	1.0
32	VA08W-176	0	2	3	10	4.0	0.0
33	VA08W-294	0	2	1	5	3.0	0.0
34	TN1102	8	4	8	80	4.3	2.5
35	NC07-23880	7	5	8	80	2.3	0.0
36	MSU Line E5011	2	4	7	50	6.7	0.0
37	MSU Line E5024	9	3	8	90	4.3	0.5
38	MSU Line E6012	0	3	2	10	6.7	0.0
LOCATION MEANS		3.9	2.9	5.1	40.3	4.8	0.7
DATE / GROWTH STAGE			June 6				

STRIPE RUST

TABLE XMC1115F. 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, 2011 UNDER NATURAL INFECTION

						LOC 04		LOC 05				LOC 06		LOC 07		
						6/24		5/12		6/5		6/10		6/16		
Entry	Cultivar/				2011	S. dough		Stem elong.		Boot		Flowering		S. dough		
No.	Designation				PLOT	IT	%	IT	%	IT	%	IT	%	IT	%	Summary
1	INW0411				1	8	100	8	60	8	80	8	90	8	100	S
2	Branson				2	3	20	5	40	2	5	3	30	5	70	MS
3	Bess				3	5	70	8	60	8	80	8	40	8	90	S
4	Shirley				4	8	100	8	60	8	80	8	50	8	100	S
5	T171				5	3	20	5	30	2	10	5	20	5	30	MR
6	MO 080104				6	5	30	5	60	3	30	5	30	5	40	MR
7	OH05-200-74				7	8	100	8	60	8	80	8	80	8	100	S
8	IL04-24668				8	8	100	8	70	8	80	8	90	8	100	S
9	IL05-4236				9	8	60	5	50	3	20	8	40	8	70	S
10	TN902				10	8	100	8	60	8	60	8	90	8	90	S
11	NC05-19896				11	5	30	5	50	3	20	8	30	5	30	MR
12	X08-18A3				12	5	20	5	50	3	10	5	20	8	70	S
13	X08-39D				13	8	100	5	50	3	10	5	20	5	20	S
14	G09408				14	8	100	8	60	8	80	8	90	8	70	S
15	G09419				15	8	100	8	70	8	60	8	80	8	70	S
16	G09607				16	8	100	8	70	8	80	8	90	8	70	S
17	IL06-14262				17	8	100	8	80	8	80	8	90	8	100	S
18	OH06-150-57				18	5	20	5	50	3	20	5	60	8	80	S
19	OH06-180-57				19	3	20	5	40	2	10	3	10	5	30	MR
20	T177				20	5	30	5	40	2	10	8	30	8	50	MS
	PS 279	**(Susceptible check)**			**21**	**8**	**100**	**8**	**60**	**8**	**80**	**8**	**70**	**8**	**100**	**S**
21	T178				22	8	80	8	70	---	---	8	90	8	100	**S**
22	GA021087-9LE33				23	3	10	5	60	3	10	2	20	5	30	MR
23	GA011446-9LE35				24	3	5	5	60	2	10	2	20	3	15	R
24	MH07-7483				25	3	5	5	30	2	10	2	10	5	20	MR
25	MH07-7474				26	5	30	5	50	3	30	8	40	5	50	MR
26	P04702A1-18				27	3	5	5	60	2	10	8	50	8	50	MS
27	P0537A1-12				28	5	10	5	30	2	10	3	20	5	30	MR
28	P06403A1-4				29	5	60	8	70	3	10	5	60	8	100	S
29	KY02C-3005-25				30	8	100	8	70	8	80	8	80	8	100	S
30	KY02C-3004-07				31	8	100	8	70	8	80	8	90	8	100	S

STRIPE RUST

Entry No.	Cultivar/ Designation				2011 PLOT	LOC 04 6/24 S. dough		LOC 05 5/12 Stem elong.		LOC 05 6/5 Boot		LOC 06 6/10 Flowering		LOC 07 6/16 S. dough		Summary
						IT	%	IT	%	IT	%	IT	%	IT	%	
31	VA05W-251				32	8	100	8	70	8	80	8	70	8	100	S
32	VA08W-176				33	3	10	5	30	2	10	3	30	5	20	MR
33	VA08W-294				34	5	20	5	50	2	10	5	40	5	30	MR
34	TN1102				35	8	100	8	70	8	80	8	90	8	100	S
35	NC07-23880				36	8	90	8	60	5	50	8	80	8	100	S
36	MSU Line E5011				37	8	100	8	70	8	80	8	90	8	100	S
37	MSU Line E5024				38	8	100	8	70	8	80	8	100	8	100	S
38	MSU Line E6012				39	3	20	5	50	3	20	3	30	5	30	MR
	PS 279	**(Susceptible check)**			**40**	**8**	**100**	**8**	**50**	**8**	**50**	**8**	**70**	**8**	**100**	**S**

* 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 may indicate that they have high-temperature, adult-plant (HTAP) resistance.

STRIPE RUST

TABLE XMC1115GH. 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 20C FOR THE SEEDLING TESTS AND AT HIGH TEMPERATURES (DIURNAL TEMPERATURES GRADUALLY CHANGING FROM 10 TO 30C) FOR THE ADULT-PLANT TESTS (Seed of all entries were not treated with fungicides)

Entry No.	Cultivar/ Designation				2011 PLOT	Infection type produced by PST races*								Possible HTAP resistance
						Seedling Test** (4 - 20 C)					Adult-plant Test** (10 - 30 C)			
						PST-37	PST-45	PST-100	PST-114	PST-100	PST-100	PST-114	PST-127	
1	INW0411				1	2	2	8	8	8	8,8,8	8,8,8	8,8,8	No
2	Branson				2	8	8	8	8	8	2,2,2	2,2,2	2,2,2	High
3	Bess				3	8	8	8	8	8	3,3,3	2,2,2	3,3,3	Low
4	Shirley				4	2	2	8	8	8	8,8,8	8,8,8	8,8,8	No
5	T171				5	8	8	8	8	8	3,3,3	3,3,3	3,3,3	Moderate
6	MO 080104				6	8	8	8	8	8	3,3,3	3,3,5	3,3,3	Moderate
7	OH05-200-74				7	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
8	IL04-24668				8	8	8	8	8	8	8,8,8	2,2,2	8,8,8	No
9	IL05-4236				9	8	8	8	8	8	3,3,4	5,5,5	5,5,5	Low
10	TN902				10	2,8(2)	2	8	8	8	8,8,8	8,8,8	8,8,8	No
11	NC05-19896				11	8	8	7	2-5	7	2,2,2	1,1,1	1,1,1	High
12	X08-18A3				12	8	8	8	8	8	2,2,2	2,2,2	3,4,4	Low
13	X08-39D				13	8	8	8	8	8	2,2,2	2,2,2	3,3,3	Moderate
14	G09408				14	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
15	G09419				15	8	8	8	8	8	3,3,3	3,3,3	2,2,2	Moderate
16	G09607				16	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
17	IL06-14262				17	2	8	8	8	8	8,8,8	8,8,8	8,8,8	No
18	OH06-150-57				18	8	8	8	8	8	1,1,2	2,2,2	5,5,5	Low
19	OH06-180-57				19	8	8	8	8	8	2,2,2	8,8,8	3,3,3	No
20	T177				20	8	7	8	8	8	2,3,3	3,3,3	8,8,8	No
	PS 279	**(Susceptible check)**			**21**	**8**	**8**	**8**	**8**	**8**	**8,8,8**	**8,8,8**	**8,8,8**	**No**
21	T178				22	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
22	GA021087-9LE33				23	2	2	8	8	8	1,1,1	1,1,1	3,3,3	Moderate
23	GA011446-9LE35				24	8	7	8	5	8	1,1,1	5,5,5	3,3,3	Low
24	MH07-7483				25	2	2	7	8	7	2,2,2	2,2,2	3,3,3	Moderate
25	MH07-7474				26	8	8	8	8	8	1,1,1	1,1,1	3,3,3	Moderate
26	P04702A1-18				27	8	5,8(1)	5	8	5	1,1,1	1,1,1	3,3,3	Moderate
27	P0537A1-12				28	8	8	8	8	8	3,3,3	4,4,3	3,3,5	Low
28	P06403A1-4				29	2	2	8	8	8	1,1,1	1,1,1	4,4,4	Low
29	KY02C-3005-25				30	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
30	KY02C-3004-07				31	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
31	VA05W-251				32	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
32	VA08W-176				33	8	8	8	5	8	2,3,3	3,3,8	3,3,3	Moderate

STRIPE RUST

Entry No.	Cultivar/ Designation				2011 PLOT	Infection type produced by PST races*								Possible HTAP resistance
						Seedling Test** (4 - 20 C)					Adult-plant Test** (10 - 30 C)			
						PST-37	PST-45	PST-100	PST-114	PST-100	PST-100	PST-114	PST-127	
33	VA08W-294				34	8	8	8	8	8	3,3,4	3,3,3	5,8,8	Low
34	TN1102				35	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
35	NC07-23880				36	8	8	6	5	6	8,8,8	8,8,8	8,8,8	No
36	MSU Line E5011				37	8	8	8	8	8	5,5,5	5,5,5	5,5,5	Low
37	MSU Line E5024				38	2	2	8	8	8	8,8,8	8,8,8	8,8,8	No
38	MSU Line E6012				39	8	8	8	8	8	2,2,2	2,2,2	3,3,3	Moderate
	PS 279	**(Susceptible check)**			**40**	**8**	**8**	**8**	**8**	**8**	**8,8,8**	**8,8,8**	**8,8,8**	**No**

* 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 seedling test, but a low IT in the adult-plant test may indicate that they have high-temperature, adult-plant (HTAP) resistance.
PST-37 is virulent on differentials 1,3,6,8,9,10,11,12; PST-45 on 1,3,12,13,15; PST-100 on 1,3,8,9,10,11,12,16,17,18,19,20; PST-114 on 1,3,4,8,9,10,11,12,14,16,17,18,19,20; and PST-127 on 1,2,3,5,6,8,9,10,11,12,13,15,16,17,18,19,20.
DIFFERENTIALS: 1 = LEMHI (*Yr21*), 2 = CHINESE 166 (*Yr1*), 3 = HEINESE VII (*Yr2,YrHVII*), 4 = MORO (*Yr10,YrMor*), 5 = PAHA (*YrPa1,YrPa2,YrPa3*), 6 = DRUCHAMP (*Yr3a,YrDru1,YrDru2*), 7 = Yr5/6*AVS (*Yr5*), 8 = PRODURA (*YrPr1,YrPr2*), 9 = YAMHILL (*Yr2,Yr4a,YrYam*), 10 = STEPHENS (*Yr3a,YrSte1,YrSte2*), 11 = LEE (*Yr7,Yr22,Yr23*), 12 = FIELDER (*Yr6,Yr20*), 13 = TYEE (*YrTye*), 14 = TRES (*YrTr1,YrTr2*), 15 = HYAK (*Yr17,YrTye*), 16 = EXPRESS (*YrExp1,YrExp2*), 17 = Yr8/6*AVS (*Yr8*), 18 = Yr9/6*AVS (*Yr9*), 19 = CLEMENT (*Yr9,YrCle*), AND 20 = COMPAIR (Yr8,Yr19).

** For the seedling tests, about 5 to 10 plants were used. Inoculation was done at the 2-leaf stage and incubated in the dew chamber at 10C for about 24 h in dark. The inoculated plants were then grown in a greenhouse growth chamber at a diurnal temperature cycle gradually changing from 4 C at 2:00 am to 20 C at 2:00 pm with a 16 h photoperiod in the day time. Infection type was recorded for the line about 20 days after inoculation
For the adult-plant tests, One-leaf seedlings were started to vernalized at 2-4C for about 6 weeks and vernalized seedlings were transplanted into a big pots. 3 plants were used in each race test. Inoculation was done at the boot to heading stages and incubated in the dew chamber at 10C for about 24 h in dark. The inoculated plants were then grown in a greenhouse growth chamber at a diurnal temperature cycle gradually changing from 10 C at 2:00 am to 30 C at 2:00 pm with a 16 h photoperiod in the day time. Infection type was recorded for each individual plant using the flag leaf about 20 days after inoculation.

SEPTORIA

		Bay AR Hancock tritici 1-9	Brownstown IL Kolb tritici	Brownstown IL Kolb nodorum	Battle Ground IN Obert tritici 0-9	Delphi IN Fogleman tritici 0-9	Tipton IN Obert tritici
1	INW0411	5.5	6.3	7.3	6	3.0	4.0
2	Branson	4.0	5.7	3.7	5	4.0	4.0
3	Bess	4.0	3.7	3.0	5	6.0	6.0
4	Shirley	3.5	2.7	5.0	3	4.0	4.0
5	T171	3.5	5.3	5.0	7	8.0	7.5
6	MO 080104	4.5	3.7	3.0	6	5.0	7.5
7	OH05-200-74	3.0	3.7	4.0	5	4.0	6.0
8	IL04-24668	4.5	6.3	2.0	8	6.0	6.0
9	IL05-4236	3.0	2.3	2.0	7	7.0	6.0
10	TN902	4.0	6.0	6.7	5	5.0	6.0
11	NC05-19896	4.0	6.0	5.3	4	3.0	1.0
12	X08-18A3	5.0	5.7	4.3	6	3.0	2.5
13	X08-39D	4.5	6.0	4.0	7	5.0	5.0
14	G09408	4.5	4.0	3.0	5	4.0	4.0
15	G09419	4.0	6.3	4.3	6	7.0	5.0
16	G09607	3.5	3.7	2.7	7	7.0	6.0
17	IL06-14262	5.0	4.7	2.3	4	6.0	4.0
18	OH06-150-57	5.5	3.0	7.7	2	4.0	4.0
19	OH06-180-57	4.0	3.3	5.0	5	5.0	6.0
20	T177	4.0	4.3	5.3	7	7.3	7.5
21	T178	7.0	3.7	5.7	7	6.0	7.5
22	GA021087-9LE33	3.0	3.7	3.3	5	4.0	1.0
23	GA011446-9LE35	4.0	5.3	7.7	6	2.0	1.0
24	MH07-7483	4.0	4.0	5.3	6	6.0	6.0
25	MH07-7474	4.5	3.0	3.3	4	6.3	6.0
26	P04702A1-18	3.0	1.3	3.0	2	4.0	6.0
27	P0537A1-12	5.5	5.0	4.0	4	5.0	6.0
28	P06403A1-4	7.5	6.7	4.7	6	6.0	6.0
29	KY02C-3005-25	3.5	3.3	4.0	3	4.0	6.0
30	KY02C-3004-07	4.5	3.7	4.3	4	6.0	6.0
31	VA05W-251	4.0	4.7	2.7	5	7.0	4.0
32	VA08W-176	3.5	2.7	4.3	4	4.0	4.0
33	VA08W-294	3.5	3.3	5.7	3	4.3	4.0
34	TN1102	5.0	2.3	3.3	5	6.0	9.0
35	NC07-23880	4.5	3.0	4.3	5	6.3	5.0
36	MSU Line E5011	4.5	3.0	6.7	7	7.0	5.0
37	MSU Line E5024	4.5	3.7	4.0	5	5.0	9.0
38	MSU Line E6012	4.0	3.0	2.7	5	7.0	9.0
LOCATION MEANS		4.3	4.2	4.3	5.2	5.2	5.3
DATE / GROWTH STAGE			11.2	11.3	June 6	June 12	June 11

SEPTORIA

		Schochoh KY Van Sanford tritici 0-9	Wooster OH Sneller tritici 0-9	Wooster OH Sneller nodorum 0-9	Nairn ON Etienne tritici 0-9	Oconto WI Murche tritici 0-9
1	INW0411	5.0	5.0	4.0	5.3	4.3
2	Branson	5.0	2.0	2.0	5.0	3.5
3	Bess	4.5	2.0	2.5	5.0	5.5
4	Shirley	4.5	2.0	1.0	4.7	2.8
5	T171	5.0	6.5	6.0	6.2	4.3
6	MO 080104	5.0	4.0	3.5	6.2	4.8
7	OH05-200-74	4.5	4.0	3.5	5.8	5.3
8	IL04-24668	6.0	3.5	3.5	6.2	5.5
9	IL05-4236	4.0	2.5	3.5	6.0	4.8
10	TN902	4.5	3.5	2.0	6.0	6.5
11	NC05-19896	4.5	1.0	1.0	4.0	3.0
12	X08-18A3	4.5	6.0	4.5	5.8	5.5
13	X08-39D	5.0	2.5	2.0	4.3	4.5
14	G09408	4.5	3.0	1.5	6.0	3.3
15	G09419	5.0	2.0	1.0	5.8	4.3
16	G09607	5.0	4.5	4.0	5.8	5.5
17	IL06-14262	5.5	3.5	3.0	5.7	4.5
18	OH06-150-57	4.0	2.0	1.5	5.5	2.3
19	OH06-180-57	5.0	2.5	2.0	5.0	4.8
20	T177	5.5	4.0	3.0	7.0	7.0
21	T178	6.0	4.0	2.0	6.8	6.0
22	GA021087-9LE33	5.0	2.0	0.0	3.7	4.0
23	GA011446-9LE35	5.0	2.0	3.0	3.7	2.8
24	MH07-7483	5.0	3.5	1.0	5.2	3.8
25	MH07-7474	4.5	2.5	0.0	4.2	3.3
26	P04702A1-18	4.0	3.5	2.5	3.5	3.3
27	P0537A1-12	6.0	4.0	3.5	4.3	4.3
28	P06403A1-4	4.5	4.0	4.5	4.2	4.3
29	KY02C-3005-25	3.5	2.0	0.0	3.0	3.5
30	KY02C-3004-07	4.0	2.5	1.0	4.8	6.0
31	VA05W-251	5.5	3.5	1.0	4.0	3.5
32	VA08W-176	4.5	2.0	1.0	3.7	3.3
33	VA08W-294	4.5	1.0	0.0	2.7	3.0
34	TN1102	4.5	2.5	1.0	5.0	5.0
35	NC07-23880	5.0	3.0	0.0	3.0	4.3
36	MSU Line E5011	4.0	4.5	4.0	5.3	5.3
37	MSU Line E5024	5.0	3.5	1.0	5.7	5.3
38	MSU Line E6012	5.5	3.5	1.5	5.8	5.8
LOCATION MEANS		4.8	3.1	2.2	5.0	4.4
DATE / GROWTH STAGE						

EASTERN SEPTORIA NURSERY

2010-11 Eastern Septoria Nursery

Late lines: NY, IL, IN, OH, KY, MO, VA, MD

Early lines: FL, GA, LA, SC, NC, TN, AR

			Stagonospora nodorum					
			Kinston Mean of 2 reps (0-9, 9 May)		Raleigh Mean of 2 reps (0-9, 11 May)		Mean of 2 locations (0-9)	
Entry	UE #	Designation	Leaves	Glumes	Leaves	Glumes	Leaves	Glumes
1	Sept check E	AGS 2000	5.5	0.5	6.0	0.5	5.8	0.5
2	Sept check E	AGS 2060	2.5	2.5	3.0	0.0	2.8	1.3
3	Sept check E	Neuse	4.5	2.0	3.0	0.5	3.8	1.3
4	Sept check E	SS 8309	3.0	1.0	5.5	1.0	4.3	1.0
5	Sept check E	USG 3209	3.5	3.0	5.0	3.0	4.3	3.0
88	Sept check L	Jensen	4.0	1.0	4.5	0.0	4.3	0.5
89	Sept check L	Kaskaskia	7.0	3.5	7.5	4.5	7.3	4.0
90	Sept check L	Bess	5.0	2.5	5.0	3.0	5.0	2.8
91	Sept check L	Pembroke	5.0	4.0	7.0	3.5	6.0	3.8
266	1	INW0411	5.5	3.5	7.0	6.0	6.3	4.8
267	2	Branson	8.0	4.0	7.5	5.5	7.8	4.8
67	3	Bess	3.5	1.0	4.5	1.5	4.0	1.3
268	4	Shirley	3.5	1.5	4.0	3.0	3.8	2.3
271	5	T171	6.5	6.0	8.0	6.5	7.3	6.3
256	6	MO 080104	4.5	2.0	6.0	5.0	5.3	3.5
263	7	OH05-200-74	4.0	2.0	4.5	2.5	4.3	2.3
250	8	IL04-24668	5.0	3.5	8.0	6.0	6.5	4.8
251	9	IL05-4236	5.0	3.0	7.5	5.0	6.3	4.0
68	10	TN902	4.5	3.5	6.0	2.5	5.3	3.0
65	11	NC05-19896	4.0	2.0	2.5	1.0	3.3	1.5
243	12	X08-18A3	5.0	4.0	5.0	2.5	5.0	3.3
244	13	X08-39D	6.0	3.0	6.5	3.5	6.3	3.3
260	14	G09408		2.0	5.0	4.0	5.0	3.0
261	15	G09419	6.0	5.0	7.5	5.0	6.8	5.0
262	16	G09607	5.0	2.5	5.0	4.5	5.0	3.5
252	17	IL06-14262	5.0	3.0	6.0	4.5	5.5	3.8
264	18	OH06-150-57	3.5	3.5	4.5	3.0	4.0	3.3
265	19	OH06-180-57	5.0	2.0	5.0	2.5	5.0	2.3
272	20	T177	9.0	6.5	7.0	6.5	8.0	6.5
273	21	T178	8.5	7.0	8.5	8.0	8.5	7.5
63	22	GA021087-9LE33	4.5	0.0	3.5	0.0	4.0	0.0
64	23	GA011446-9LE35	3.5	2.0	4.0	2.0	3.8	2.0
245	24	MH07-7483	4.5	2.5	4.5	3.0	4.5	2.8
246	25	MH07-7474	5.0	2.0	4.5	2.0	4.8	2.0
257	26	P04702A1-18	5.0	4.5	6.0	6.0	5.5	5.3
258	27	P0537A1-12	6.5	3.5	7.0	4.0	6.8	3.8
259	28	P06403A1-4	6.5	4.0	5.5	4.5	6.0	4.3
269	29	KY02C-3005-25	3.5	1.0	4.0	0.5	3.8	0.8
270	30	KY02C-3004-07	4.5	1.5	5.5	2.0	5.0	1.8
247	31	VA05W-251	4.5	2.0	4.5	1.5	4.5	1.8
248	32	VA08W-176	5.0	4.0	4.0	1.0	4.5	2.5
249	33	VA08W-294	4.0	1.0	3.5	1.0	3.8	1.0
69	34	TN1102	3.5	2.0	5.5	2.5	4.5	2.3
66	35	NC07-23880	5.0	1.5	4.0	0.0	4.5	0.8
253	36	MSU Line E5011	4.0	1.5	4.5	1.5	4.3	1.5
254	37	MSU Line E5024	4.5	1.0	5.0	1.5	4.8	1.3
255	38	MSU Line E6012	7.0	2.5	6.0	2.5	6.5	2.5

FUSARIUM HEAD BLIGHT (SCAB)

		Urbana IL Kolb						Tipton IN Obert
		Scab Incid. %	Scab Severity %	FHB Index 0-100	Kernel Rating % FDK	ISK Index 0-100	DON ppm	0-9
1	INW0411	98.3	51.3	50.6	43.3	62.2	10.5	1
2	Branson	98.3	63.1	62.4	66.7	75.1	17.7	1
3	Bess	96.7	38.9	37.7	40.0	56.7	9.1	1
4	Shirley	100.0	59.1	59.1	75.0	77.7	22.9	3
5	T171	100.0	77.8	77.8	71.7	82.0	17.2	2
6	MO 080104	85.0	17.1	14.6	30.0	42.6	6.5	3
7	OH05-200-74	98.3	34.9	34.2	53.3	61.3	19.5	1
8	IL04-24668	91.7	45.8	42.1	31.7	53.9	9.4	4
9	IL05-4236	96.7	38.3	37.1	31.7	53.2	9.5	3
10	TN902	100.0	89.3	89.3	88.3	92.1	31.6	6
11	NC05-19896	100.0	62.8	62.8	58.3	72.2	19.2	3
12	X08-18A3	100.0	57.4	57.4	83.3	80.5	20.5	2
13	X08-39D	100.0	49.6	49.6	41.7	61.5	16.5	2
14	G09408	100.0	40.8	40.8	50.0	62.2	13.2	3
15	G09419	100.0	42.6	42.6	58.3	66.2	17.4	2
16	G09607	100.0	83.1	83.1	63.3	80.3	12.2	3
17	IL06-14262	95.0	26.3	24.7	25.0	46.4	10.6	2
18	OH06-150-57	100.0	65.6	65.6	60.0	73.7	20.8	1
19	OH06-180-57	100.0	69.0	69.0	60.0	74.7	15.8	1
20	T177	100.0	80.3	80.3	76.7	84.8	17.0	5
21	T178	100.0	86.5	86.5	83.3	89.3	22.4	3
22	GA021087-9LE33	98.3	63.3	62.2	83.3	81.8	37.2	1
23	GA011446-9LE35	100.0	84.3	84.3	93.3	92.7	24.9	3
24	MH07-7483	98.3	67.9	66.8	83.3	83.2	33.8	1
25	MH07-7474	100.0	73.2	73.2	66.7	78.7	12.7	1
26	P04702A1-18	100.0	71.3	71.3	70.0	79.4	25.8	2
27	P0537A1-12	100.0	52.2	52.2	50.0	65.7	14.8	2
28	P06403A1-4	98.3	40.2	39.6	50.0	61.6	14.1	2
29	KY02C-3005-25	90.0	22.6	20.7	33.3	47.1	8.6	0
30	KY02C-3004-07	100.0	28.2	28.2	40.0	54.4	14.5	1
31	VA05W-251	100.0	50.1	50.1	43.3	62.4	9.8	2
32	VA08W-176	100.0	59.6	59.6	60.0	71.9	14.6	2
33	VA08W-294	95.0	43.3	40.9	43.3	58.8	13.1	1
34	TN1102	100.0	53.9	53.9	70.0	74.2	18.0	1
35	NC07-23880	100.0	77.8	77.8	81.7	86.0	22.4	1
36	MSU Line E5011	100.0	73.2	73.2	75.0	82.0	22.2	1
37	MSU Line E5024	100.0	44.0	44.0	55.0	65.2	33.8	1
38	MSU Line E6012	100.0	71.0	71.0	55.0	73.3	22.5	1
LOCATION MEANS		98.4	56.7	56.2	59.1	70.2	17.0	2.0
DATE / GROWTH STAGE				June 9-14				

FUSARIUM HEAD BLIGHT (SCAB)

		Mt. Vernon IN Fogleman	Schochoh KY Van Sanford	Clarksville MD Costa		E Lansing MI Lewis	
					Incidence % spikes	Severity % within spikes	Index % overall infection
		0-9	0-9	0-9	0-9		
1	INW0411	1.9	1.5	3.0	12.5	17.0	3.3
2	Branson	4.5	2.5	6.5	6.5	31.5	4.2
3	Bess	1.7	1.0	2.0	4.5	9.9	0.8
4	Shirley	4.0	2.5	6.5	21.0	28.1	7.0
5	T171	3.5	1.0	5.5	13.0	25.5	4.1
6	MO 080104	2.5	1.0	1.5	2.7	8.0	1.1
7	OH05-200-74	2.5	1.0	2.5	7.5	15.3	2.4
8	IL04-24668	4.5	1.0	3.5	6.0	9.5	3.0
9	IL05-4236	3.5	2.0	2.0	7.0	11.4	2.8
10	TN902	8.5	2.5	7.0	12.5	20.7	3.1
11	NC05-19896	4.0	1.0	3.5	18.0	18.1	4.6
12	X08-18A3	3.5	3.0	2.5	4.5	7.9	0.8
13	X08-39D	2.7	2.0	2.5	20.0	11.7	3.4
14	G09408	3.5	1.5	4.5	7.5	15.2	1.5
15	G09419	4.5	1.0	2.5	7.5	13.9	3.0
16	G09607	2.5	2.0	4.0	5.5	35.2	3.8
17	IL06-14262	1.7	1.0	2.0	6.0	9.1	2.9
18	OH06-150-57	3.0	2.0	5.0	15.0	14.8	3.6
19	OH06-180-57	2.5	1.0	2.5	15.0	27.6	-0.3
20	T177	6.5	1.5	7.0	9.0	28.1	3.5
21	T178	5.0	2.0	7.0	12.5	25.4	4.4
22	GA021087-9LE33			LATE	38.5	33.1	9.7
23	GA011446-9LE35	5.0	2.5	7.0	25.5	26.0	7.8
24	MH07-7483	3.0	2.5	3.5	5.0	28.7	2.7
25	MH07-7474	2.7	3.0	3.5	8.5	21.2	2.9
26	P04702A1-18	3.0	1.0	4.5	12.5	19.2	4.2
27	P0537A1-12	2.9	1.5	5.5	10.5	20.1	3.5
28	P06403A1-4	4.0		3.0	10.0	5.4	1.5
29	KY02C-3005-25	1.9	0.5	1.0	3.5	7.0	-3.3
30	KY02C-3004-07	2.0	1.0	2.0	6.0	5.7	-3.8
31	VA05W-251	4.5	1.5	5.5	9.5	37.3	4.8
32	VA08W-176	4.0	1.0	2.5	13.5	24.2	4.4
33	VA08W-294	2.0	1.0	2.5	8.5	15.1	2.7
34	TN1102	2.4	2.5	6.0	10.5	37.6	5.0
35	NC07-23880	4.0	3.5	7.0	23.0	21.0	4.0
36	MSU Line E5011	2.5		5.0	33.5	43.2	13.2
37	MSU Line E5024	2.0	1.5	2.5	31.5	11.1	-0.6
38	MSU Line E6012	3.0	2.5	6.5	8.3	34.1	3.9
LOCATION MEANS		3.4	1.7	4.1	12.4	20.4	3.3
DATE / GROWTH STAGE							

FUSARIUM HEAD BLIGHT (SCAB)

					Columbia MO McKendry			
		Inoculation Date	Incidence	Severity	FHBI	FDK	ISK	Natural Infection
		Julian	%	%	%	%	%	%
1	INW0411	144.0	95	18.0	18.6	38.5	49.3	0
2	Branson	141.5	95	23.5	25.4	26.0	46.0	1
3	Bess	145.0	90	15.9	17.7	17.0	38.6	0
4	Shirley	141.5	100	33.3	33.3	46.0	58.4	2
5	T171	141.0	90	29.5	34.4	50.0	55.9	1
6	MO 080104	141.0	90	9.2	9.9	17.5	36.8	0
7	OH05-200-74	148.0	80	8.9	10.8	42.5	43.7	0
8	IL04-24668	139.5	60	12.3	19.0	13.5	27.1	0
9	IL05-4236	138.0	95	15.8	16.5	25.0	43.2	1
10	TN902	142.0	90	22.5	24.6	48.0	53.0	6
11	NC05-19896	141.0	100	35.8	35.8	48.0	59.9	1
12	X08-18A3	141.5	95	35.7	38.4	42.5	56.2	0
13	X08-39D	145.0	100	26.0	26.0	30.0	49.8	1
14	G09408	145.0	100	20.7	20.7	27.5	47.2	1
15	G09419	141.5	100	23.6	23.6	33.5	50.5	0
16	G09607	146.0	90	20.2	21.3	29.0	44.7	2
17	IL06-14262	146.0	90	8.6	9.4	9.0	33.2	0
18	OH06-150-57	145.0	95	33.0	34.9	37.5	53.4	1
19	OH06-180-57	145.0	100	27.9	27.9	35.5	52.6	0
20	T177	138.5	95	26.5	27.9	51.0	56.9	1
21	T178	139.5	100	35.2	35.2	55.5	62.8	3
22	GA021087-9LE33	152.0	85	9.4	10.7	29.5	40.1	4
23	GA011446-9LE35	142.5	100	32.8	32.8	61.0	64.2	4
24	MH07-7483	149.0	90	11.2	12.4	36.0	44.8	1
25	MH07-7474	147.0	95	21.0	21.5	29.0	46.4	1
26	P04702A1-18	143.5	95	23.7	24.4	43.5	53.0	0
27	P0537A1-12	141.0	100	28.9	28.9	42.5	55.7	1
28	P06403A1-4	137.5	85	13.1	14.5	41.5	46.0	0
29	KY02C-3005-25	151.0	55	4.7	8.3	5.0	19.9	0
30	KY02C-3004-07	149.0	65	7.7	11.6	25.0	31.8	0
31	VA05W-251	144.0	100	31.4	31.4	28.5	50.8	2
32	VA08W-176	147.0	90	25.4	26.5	29.0	46.2	3
33	VA08W-294	143.0	100	26.8	26.8	34.5	51.8	0
34	TN1102	147.0	90	12.7	14.1	31.0	43.2	4
35	NC07-23880	147.0	100	19.8	19.8	46.0	54.3	4
36	MSU Line E5011	151.0	100	11.8	11.8	16.0	39.9	1
37	MSU Line E5024	146.0	90	12.0	12.8	12.0	35.4	0
38	MSU Line E6012	145.0	100	16.5	16.5	19.0	42.6	1
LOCATION MEANS		144.2	91.8	20.8	22.0	32.9	47.0	1.2
DATE / GROWTH STAGE								

FUSARIUM HEAD BLIGHT (SCAB)

		Incidence	Nairn ON Etienne Severity	Scab
		%	%	%
1	INW0411	85.0	20.0	17.0
2	Branson	90.0	40.0	36.0
3	Bess	70.0	25.0	17.8
4	Shirley	80.0	30.0	24.0
5	T171	92.5	47.5	44.1
6	MO 080104	87.5	20.0	17.8
7	OH05-200-74	82.5	17.5	15.0
8	IL04-24668	87.5	35.0	30.5
9	IL05-4236	82.5	25.0	19.9
10	TN902	62.5	27.5	18.8
11	NC05-19896	87.5	35.0	30.5
12	X08-18A3	82.5	35.0	29.6
13	X08-39D	80.0	15.0	11.8
14	G09408	47.5	32.5	18.3
15	G09419	77.5	27.5	21.0
16	G09607	70.0	22.5	17.6
17	IL06-14262	77.5	25.0	19.8
18	OH06-150-57	70.0	40.0	28.0
19	OH06-180-57	75.0	30.0	22.5
20	T177	95.0	55.0	52.3
21	T178	95.0	42.5	40.4
22	GA021087-9LE33	40.0	35.0	14.5
23	GA011446-9LE35	80.0	40.0	31.0
24	MH07-7483	80.0	35.0	28.0
25	MH07-7474	65.0	35.0	25.8
26	P04702A1-18	95.0	27.5	26.1
27	P0537A1-12	85.0	17.5	15.3
28	P06403A1-4	92.5	17.5	16.3
29	KY02C-3005-25	70.0	22.5	15.8
30	KY02C-3004-07	85.0	27.5	23.4
31	VA05W-251	75.0	47.5	35.6
32	VA08W-176	82.5	20.0	16.5
33	VA08W-294	77.5	25.0	20.1
34	TN1102	85.0	32.5	27.8
35	NC07-23880	77.5	37.5	29.0
36	MSU Line E5011	85.0	50.0	43.3
37	MSU Line E5024	70.0	15.0	10.8
38	MSU Line E6012	85.0	35.0	29.8
LOCATION MEANS		79.1	30.7	24.8
DATE / GROWTH STAGE				

POWDERY MILDEW

		Battle Ground IN Obert 0-9	Delphi IN Fogleman 0-9	Plymouth NC Murphy 0-9	Wooster OH Sneller 0-9	Nairon ON Etienne 0-9
1	INW0411	1	1	2	1.0	0.0
2	Branson	3	1	1	1.0	0.8
3	Bess	4	3	8	2.5	1.5
4	Shirley	2	4	0	0.0	0.0
5	T171	6	2	7	2.5	2.2
6	MO 080104	3	2	1	1.0	0.0
7	OH05-200-74	3	2	3	2.0	0.8
8	IL04-24668	2	6	6	3.0	2.5
9	IL05-4236	3	2	0	1.0	0.7
10	TN902	7	9	6	6.0	2.5
11	NC05-19896	4	3	0	1.5	0.2
12	X08-18A3	5	3	6	4.5	2.3
13	X08-39D	3	3	2	1.5	0.5
14	G09408	4	2	2	2.5	0.5
15	G09419	2	2	1	1.0	0.0
16	G09607	3	2	4	1.0	1.5
17	IL06-14262	3	3	6	2.5	2.3
18	OH06-150-57	2	2	3	2.0	0.5
19	OH06-180-57	2	3	5	1.5	1.2
20	T177	2	2	4	5.5	3.8
21	T178	3	2	6	6.0	3.7
22	GA021087-9LE33	1	4	2	0.0	0.0
23	GA011446-9LE35	3	3	0	0.0	0.3
24	MH07-7483	3	5	6	1.5	1.3
25	MH07-7474	2	2	4	1.0	0.8
26	P04702A1-18	5	3	7	3.0	0.5
27	P0537A1-12	3	2	1	1.0	0.3
28	P06403A1-4	4	2	6	4.5	1.2
29	KY02C-3005-25	6	8	7	5.0	1.3
30	KY02C-3004-07	5	9	7	5.5	3.8
31	VA05W-251	2	2	1	1.0	0.0
32	VA08W-176	2	3	3	0.5	0.2
33	VA08W-294	4	3	0	0.0	0.0
34	TN1102	4	2	1	1.0	0.0
35	NC07-23880	3	2	2	1.0	0.0
36	MSU Line E5011	4	6	7	3.0	1.8
37	MSU Line E5024	3	2	1	0.5	0.0
38	MSU Line E6012	4	2	4	1.5	1.8
LOCATION MEANS		3.3	3.1	3.5	2.1	1.1
DATE / GROWTH STAGE		June 6	June 9			

POWDERY MILDEW

		Warsaw VA Griffey 0-9	Arlington WI Martinka 0-9	Oconto WI Murche 0-9	ENTRY MEANS ALL LOCATIONS
1	INW0411	0.5	0.0	0.7	0.8
2	Branson	0.0	0.0	0.0	0.9
3	Bess	3.5	0.0	0.7	2.9
4	Shirley	0.0	0.0	0.0	0.8
5	T171	4.5	0.0	0.7	3.1
6	MO 080104	0.0	0.0	1.0	1.0
7	OH05-200-74	1.5	0.0	0.7	1.6
8	IL04-24668	3.5	0.0	1.0	3.0
9	IL05-4236	0.0	0.0	0.0	0.8
10	TN902	4.0	3.3	3.0	5.1
11	NC05-19896	0.0	0.0	0.0	1.1
12	X08-18A3	4.5	0.0	2.3	3.5
13	X08-39D	0.5	0.0	0.7	1.4
14	G09408	0.0	0.0	0.3	1.4
15	G09419	2.0	0.0	0.0	1.0
16	G09607	1.0	0.0	0.0	1.6
17	IL06-14262	3.5	1.0	1.0	2.8
18	OH06-150-57	1.0	0.0	0.0	1.3
19	OH06-180-57	2.0	0.0	1.3	2.0
20	T177	1.0	0.0	2.0	2.5
21	T178	6.0	0.0	4.0	3.8
22	GA021087-9LE33	0.0	0.0	0.0	0.9
23	GA011446-9LE35	0.0	0.0	0.0	0.8
24	MH07-7483	0.5	0.0	0.7	2.2
25	MH07-7474	0.5	0.0	0.0	1.3
26	P04702A1-18	5.0	0.0	0.0	2.9
27	P0537A1-12	0.5	0.0	0.3	1.0
28	P06403A1-4	2.0	0.7	2.3	2.8
29	KY02C-3005-25	4.0	2.0	4.7	4.7
30	KY02C-3004-07	6.0	0.0	1.7	4.7
31	VA05W-251	0.0	0.0	0.0	0.8
32	VA08W-176	0.0	0.0	0.0	1.1
33	VA08W-294	0.0	0.0	0.0	0.9
34	TN1102	1.0	0.0	2.3	1.4
35	NC07-23880	0.0	0.0	0.3	1.0
36	MSU Line E5011	3.0	1.3	2.0	3.5
37	MSU Line E5024	0.0	0.0	0.0	0.8
38	MSU Line E6012	0.0	0.0	0.3	1.7
LOCATION MEANS		1.6	0.2	0.9	2.0
DATE / GROWTH STAGE					

VIRUSES

			Urbana IL		Winfield KS	Clarksville MD
			Kolb		Perry	Costa
		SBMV	BYDV	BYDV	SBMV	soilborne complex
		0-9	0-9	% stunting	0-9	0-9
1	INW0411	2.5	5.0	1.5	0	0.0
2	Branson	6.5	5.0	2.9	0	0.0
3	Bess	4.5	4.5	-0.1	0	0.0
4	Shirley	2.0	6.0	6.3	0	0.0
5	T171	5.0	5.5	13.1	0	0.0
6	MO 080104	5.0	5.5	9.5	0	0.0
7	OH05-200-74	5.0	6.5	7.1	9	3.0
8	IL04-24668	3.5	5.5	2.9	0	0.0
9	IL05-4236	2.5	5.5	5.4	0	0.0
10	TN902	4.0	5.0	-0.1	0	0.0
11	NC05-19896	5.5	5.0	7.8	0	0.0
12	X08-18A3	1.0	5.5	4.2	0	0.0
13	X08-39D	2.5	5.0	1.4	0	0.0
14	G09408	6.0	5.5	13.7	9	7.5
15	G09419	6.5	5.5	11.8	9	3.0
16	G09607	4.0	5.0	-1.9	0	1.0
17	IL06-14262	3.5	6.5	13.5	0	1.0
18	OH06-150-57	7.0	5.5	11.0	0	0.0
19	OH06-180-57	4.0	6.0	11.0	9	4.5
20	T177	1.0	5.5	13.8	0	0.0
21	T178	1.0	6.0	13.5	0	0.0
22	GA021087-9LE33	9.0	5.0	8.3	9	9.0
23	GA011446-9LE35	8.5	5.0	4.6	0	1.5
24	MH07-7483	1.0	5.5	6.8	6	0.0
25	MH07-7474	7.0	8.5	28.1	6	2.5
26	P04702A1-18	4.0	6.0	17.6	0	1.0
27	P0537A1-12	3.5	6.0	13.1	0	0.0
28	P06403A1-4	1.0	5.5	9.5	0	0.0
29	KY02C-3005-25	4.0	5.0	9.2	0	0.0
30	KY02C-3004-07	3.0	5.0	13.2	9	4.0
31	VA05W-251	5.5	5.0	2.9	0	0.0
32	VA08W-176	1.0	4.5	1.5	0	0.5
33	VA08W-294	8.0	4.5	7.5	9	3.5
34	TN1102	6.0	4.0	5.5	0	0.0
35	NC07-23880	8.0	5.5	9.1	0	0.5
36	MSU Line E5011	1.0	6.5	6.0	0	0.0
37	MSU Line E5024	3.0	6.0	11.6	9	7.0
38	MSU Line E6012	2.5	5.5	12.3	0	0.0
LOCATION MEANS		4.2	5.5	8.3	2.2	1.3

VIRUSES

		Wooster OH Sneller BYDV 0-9	Blacksburg VA Griffey BYDV 0-9
1	INW0411	3.0	1.0
2	Branson	0.0	0.5
3	Bess	0.0	0.5
4	Shirley	0.0	0.0
5	T171	1.0	0.5
6	MO 080104	0.5	1.0
7	OH05-200-74	5.5	0.0
8	IL04-24668	2.5	1.0
9	IL05-4236	0.0	0.0
10	TN902	0.0	0.0
11	NC05-19896	0.0	0.5
12	X08-18A3	0.0	0.5
13	X08-39D	2.5	0.0
14	G09408	1.5	1.0
15	G09419	1.0	1.5
16	G09607	2.0	1.0
17	IL06-14262	1.5	0.5
18	OH06-150-57	0.0	1.0
19	OH06-180-57	0.0	1.5
20	T177	8.0	1.0
21	T178	7.5	0.5
22	GA021087-9LE33	2.5	0.0
23	GA011446-9LE35	1.0	2.0
24	MH07-7483	0.0	0.5
25	MH07-7474	1.5	1.0
26	P04702A1-18	0.0	1.0
27	P0537A1-12	3.0	0.5
28	P06403A1-4	2.0	1.0
29	KY02C-3005-25	0.5	0.5
30	KY02C-3004-07	1.5	0.5
31	VA05W-251	1.0	1.0
32	VA08W-176	0.0	0.5
33	VA08W-294	0.0	0.5
34	TN1102	1.0	1.5
35	NC07-23880	1.0	1.0
36	MSU Line E5011	0.0	0.5
37	MSU Line E5024	2.5	0.5
38	MSU Line E6012	4.5	1.0
LOCATION MEANS		1.5	0.7

HESSIAN FLY

				W Lafayette IN Cambron		
		Bio B R-S	Bio C R-S	Bio D R-S	Bio O R-S	Bio L R-S
1	INW0411	15-0	14-0	14-0	0-23	0-16
2	Branson	8-8	0-13	0-16	12-4	0-18
3	Bess	0-15	0-17	0-13	0-16	0-16
4	Shirley	0-15	16-2	0-17	0-15	0-16
5	T171	0-20	0-17	0-17	0-19	0-15
6	MO 080104	18-0	3-13	0-10	0-16	0-20
7	OH05-200-74	0-18	0-15	0-14	16-2	0-14
8	IL04-24668	15-0	0-17	0-9	0-14	0-19
9	IL05-4236	0-12	15-3	0-13	0-18	0-16
10	TN902	0-17	0-16	0-10	0-18	0-19
11	NC05-19896	3-16	0-17	0-18	0-15	0-16
12	X08-18A3	0-19	0-13	0-15	0-15	0-12
13	X08-39D	6-11	7-5	0-18	11-0	0-16
14	G09408	17-0	6-10	0-12	0-11	0-17
15	G09419	0-19	0-16	0-11	13-2	0-18
16	G09607	0-18	0-18	0-11	0-12	0-14
17	IL06-14262	15-0	5-9	0-12	0-17	0-17
18	OH06-150-57	0-22	0-13	0-15	0-14	0-17
19	OH06-180-57	0-19	0-18	0-11	0-15	0-19
20	T177	0-22	0-15	0-11	0-13	0-17
21	T178	0-16	0-20	0-13	0-22	0-16
22	GA021087-9LE33	0-6	0-8	0-15	4-3	0-10
23	GA011446-9LE35	20-0	15-0	16-0	14-0	15-0
24	MH07-7483	0-16	0-15	0-9	0-10	0-17
25	MH07-7474	19-0	0-16	0-8	9-7	0-18
26	P04702A1-18	15-1	7-8	0-14	0-13	0-18
27	P0537A1-12	0-18	0-14	0-13	0-21	0-20
28	P06403A1-4	0-18	2-16	0-16	0-17	0-19
29	KY02C-3005-25	0-16	0-13	0-14	0-17	0-14
30	KY02C-3004-07	0-18	0-17	0-13	0-15	0-16
31	VA05W-251	1-15	2-12	0-10	0-14	0-16
32	VA08W-176	0-17	0-18	0-18	0-17	0-19
33	VA08W-294	0-15	0-16	0-11	0-17	0-19
34	TN1102	0-17	0-16	0-11	0-11	0-19
35	NC07-23880	0-16	0-18	0-16	0-18	0-17
36	MSU Line E5011	0-15	0-19	0-16	0-15	0-17
37	MSU Line E5024	0-20	0-15	0-16	0-15	0-18
38	MSU Line E6012	0-15	0-15	0-17	0-21	0-17

ACID SOIL TOLERANCE

			Enid OK Carver	
		0-5	0-5	0-5
1	INW0411	4	3	3
2	Branson	4	4	4
3	Bess	2	1	0
4	Shirley	3	3	1
5	T171	2	2	2
6	MO 080104	0	0	2
7	OH05-200-74	1	2	2
8	IL04-24668	1	1	0
9	IL05-4236	1	1	0
10	TN902	0	0	0
11	NC05-19896	0	0	1
12	X08-18A3	5	4	5
13	X08-39D	1	1	0
14	G09408	3	2	1
15	G09419	1	1	2
16	G09607	0	0	0
17	IL06-14262	4	4	4
18	OH06-150-57	2	1	1
19	OH06-180-57	5	4	4
20	T177	3	2	3
21	T178	3	2	2
22	GA021087-9LE33	3	2	2
23	GA011446-9LE35	0	0	2
24	MH07-7483	3	3	1
25	MH07-7474	1	1	0
26	P04702A1-18	4	3	5
27	P0537A1-12	1	0	0
28	P06403A1-4	2	2	3
29	KY02C-3005-25	2	1	1
30	KY02C-3004-07	3	2	2
31	VA05W-251	1	0	0
32	VA08W-176	2	1	1
33	VA08W-294	1	1	1
34	TN1102	1	0	0
35	NC07-23880	0	0	0
36	MSU Line E5011	3	2	1
37	MSU Line E5024	3	3	3
38	MSU Line E6012	4	3	1
LOCATION MEANS		2.1	1.6	1.6
DATE / GROWTH STAGE		Nov 8	Feb 23	April 28

FREEZE TEST

		Raleigh NC Livingston	
		Avg. Survival Rating	Avg. % Survival
1	INW0411	3.3	97.5
2	Branson	1.7	60.0
3	Bess	1.9	80.0
4	Shirley	1.0	45.0
5	T171	3.4	100.0
6	MO 080104	2.2	85.0
7	OH05-200-74	1.3	57.5
8	IL04-24668	3.3	100.0
9	IL05-4236	3.5	95.0
10	TN902	1.0	55.0
11	NC05-19896	2.4	87.5
12	X08-18A3	2.1	82.5
13	X08-39D	1.9	80.0
14	G09408	1.6	67.5
15	G09419	1.4	62.5
16	G09607	1.2	60.0
17	IL06-14262	1.9	82.5
18	OH06-150-57	1.7	70.0
19	OH06-180-57	1.6	65.0
20	T177	3.0	92.5
21	T178	3.1	90.0
22	GA021087-9LE33	2.0	75.0
23	GA011446-9LE35	2.9	92.5
24	MH07-7483	0.8	35.0
25	MH07-7474	0.9	42.5
26	P04702A1-18	1.5	67.5
27	P0537A1-12	2.3	80.0
28	P06403A1-4	2.9	85.0
29	KY02C-3005-25	1.6	70.0
30	KY02C-3004-07	2.6	92.5
31	VA05W-251	2.7	87.5
32	VA08W-176	1.6	65.0
33	VA08W-294	2.4	80.0
34	TN1102	1.6	57.5
35	NC07-23880	1.1	60.0
36	MSU Line E5011	1.9	80.0
37	MSU Line E5024	2.4	85.0
38	MSU Line E6012	0.9	55.0
LOCATION MEANS		2.0	74.3
	LSD (0.5)	0.7	14

KERNEL WEIGHT (grams)

		Nairn ON Etienne TKW gm
1	INW0411	37.2
2	Branson	39.6
3	Bess	36.5
4	Shirley	42.4
5	T171	36.1
6	MO 080104	34.3
7	OH05-200-74	38.6
8	IL04-24668	36.6
9	IL05-4236	36.3
10	TN902	41.3
11	NC05-19896	38.8
12	X08-18A3	45.2
13	X08-39D	36.1
14	G09408	35.5
15	G09419	39.6
16	G09607	37.9
17	IL06-14262	33.6
18	OH06-150-57	38.2
19	OH06-180-57	34.2
20	T177	30.3
21	T178	30.1
22	GA021087-9LE33	41.8
23	GA011446-9LE35	35.0
24	MH07-7483	40.2
25	MH07-7474	39.9
26	P04702A1-18	42.8
27	P0537A1-12	41.7
28	P06403A1-4	36.8
29	KY02C-3005-25	37.3
30	KY02C-3004-07	37.6
31	VA05W-251	38.8
32	VA08W-176	35.6
33	VA08W-294	37.2
34	TN1102	36.8
35	NC07-23880	35.3
36	MSU Line E5011	38.6
37	MSU Line E5024	35.5
38	MSU Line E6012	37.6
LOCATION MEANS		37.6

MARKER DATA

Raleigh, NC
Brown-Guedira

***vrn-A1a = short vernalizing allele**

		Rht-B1b	Rht-D1b	Rht8	Ppd-D1a	vrn-A1	Lr34/Yr18	Lr37/Yr17
1	INW0411	**yes**	no	no	**yes**	vrn-A1b	no	no
2	Branson	**yes**	no	no	**yes**	vrn-A1b	no	no
3	Bess	**yes**	no	no	no	vrn-A1b	no	no
4	Shirley	**yes**	no	no	**yes**	vrn-A1b	no	no
5	T171	**yes**	no	no	**yes**	vrn-A1b	no	no
6	MO080104	no	no	no	**yes**	vrn-A1b	no	no
7	OH05-200-74	**yes**	no	no	no	vrn-A1b	no	no
8	IL04-24668	**yes**	no	no	**yes**	Negative	no	no
9	IL05-4236	**yes**	no	**het**	no	vrn-A1b	no	no
10	TN902	no	**yes**	**het**	**yes**	vrn-A1b	no	no
11	NC05-19896	no	**yes**	no	**yes**	vrn-A1b	no	**het**
12	X08-18A3	**yes**	no	no	**yes**	vrn-A1b	no	**yes**
13	X08-39D	no	**yes**	no	**yes**	vrn-A1b	no	no
14	G09408	**yes**	no	no	no	vrn-A1b	no	no
15	G09419	no	no	no	no	vrn-A1b	no	no
16	G09607	**yes**	no	no	no	vrn-A1b	no	no
17	IL06-14262	**yes**	no	no	no	vrn-A1b	no	no
18	OH06-150-57	**yes**	no	**yes**	**yes**	vrn-A1b	no	**yes**
19	OH06-180-57	no	no	**yes**	**yes**	vrn-A1b	no	no
20	T177	**yes**	Negative	no	**yes**	**vrn-A1a**	no	**het**
21	T178	**yes**	no	no	**yes**	**vrn-A1a**	no	no
22	GA021087-9LE33	no	**yes**	no	no	vrn-A1b	no	**yes**
23	GA011446-9LE35	**yes**	no	no	**yes**	vrn-A1b	no	**yes**
24	MH07-7483	**yes**	no	no	**yes**	vrn-A1b	no	no
25	MH07-7474	**yes**	no	no	no	vrn-A1b	no	no
26	P04702A1-18	**yes**	no	no	no	vrn-A1b	no	**yes**
27	P0537A1-12	no	**yes**	no	**yes**	vrn-A1b	no	no
28	P06403A1-4	**yes**	no	no	**yes**	vrn-A1b	**yes**	**yes**
29	KY02C-3005-25	**yes**	no	no	no	vrn-A1b	**yes**	no
30	KY02C-3004-07	no	**yes**	no	**yes**	vrn-A1b	no	no
31	VA05W-251	no	**yes**	no	**yes**	**vrn-A1a**	no	no
32	VA08W-176	no	**yes**	no	no	vrn-A1b	no	no
33	VA08W-294	no	**yes**	no	no	vrn-A1b	no	no
34	TN1102	**yes**	no	no	no	vrn-A1b	no	no
35	NC07-23880	no	**yes**	no	no	vrn-A1b	no	no
36	MSULineE5011	no	**yes**	no	no	vrn-A1b	no	no
37	MSULineE5024	no	**yes**	no	**yes**	vrn-A1b	no	no
38	MSULineE6012	no	**yes**	no		vrn-A1b	no	no

MARKER DATA

Raleigh, NC
Brown-Guedira

		Sr36	Sr24/Lr24	Sr2	Sr9a	Lr9	11VA TCRK + MFQS Avir9	11VA TNRJ Vir9	Lr19/Sr25
1	INW0411	**yes**	no	no	no	no	3	0;	no
2	Branson	no	no	no	no	no	23	3	no
3	Bess	no	no	no	no	no	3	3	no
4	Shirley	**yes**	no	no	no	no	;1	0;	no
5	T171	no	no	no	no	no	0;	;1-	no
6	MO080104	no	no	no	no	no	3	3	no
7	OH05-200-74	no	no	no	no	no	23	23	no
8	IL04-24668	no	no	no	no	no	23;	3	no
9	IL05-4236	no	no	no	no	no	3	3	no
10	TN902	no	no	no	no	no	3;	;1	no
11	NC05-19896	**yes**	no	no	no	no	0;	;1	no
12	X08-18A3	no		no	no	no	23;	;1	no
13	X08-39D	no	no	no	no	**yes?**	3	3	no
14	G09408	**yes**	no	no	no	no	3	3	no
15	G09419	**yes**	no	no	no	no	3	3	no
16	G09607	no	no	no	no	no	3/0;	;1	no
17	IL06-14262	no	no	no	no	no	3-	3	no
18	OH06-150-57	no	no	no	no	no	23;	;1	no
19	OH06-180-57	no	no	no	no	no	3	3/0;	no
20	T177	**yes**	no	no	no	no	23;	3;	no
21	T178	**yes**	no	no	no	no	3	3	no
22	GA021087-9LE33	no	no	no	no	no	12;	;1	no
23	GA011446-9LE35	no	no	no	no	no	23;	;1=	no
24	MH07-7483	no	no	no	no	no	3;	0;	no
25	MH07-7474	no	no	no	no	no	3	3	no
26	P04702A1-18	**yes**	no	no	no	no	23;	0;	no
27	P0537A1-12	no	no	no	no	no	3;	3	no
28	P06403A1-4	no	no	no	no	no	;1-	0;	no
29	KY02C-3005-25	no	**yes**	no	no	no	3	3/0;	no
30	KY02C-3004-07	no	**yes**	no	no	**yes**	SKIP	3	no
31	VA05W-251	no	no	no	no	**yes**	;1-	23	no
32	VA08W-176	no	**yes**	no	no	no	3	3	no
33	VA08W-294	no	no	no	no	**yes**	0;	23	no
34	TN1102	no	no	no	no	no	SKIP	3	no
35	NC07-23880	**yes**	no	no	no	**yes**	0;	23	no
36	MSULineE5011	no	no	no	no	no	SKIP	3	no
37	MSULineE5024	no	no	no	no	no	SKIP	;1	no
38	MSULineE6012	no	no	no	no	no	3	3	no

MARKER DATA

Raleigh, NC
Brown-Guedira

***APR Yr from P26R61; only called yes if both flanking markers are present**

		Qyr.uga-2AS*	Fhb1	Fhb 5A Ernie	Fhb 5A Ning7840	Fhb 2DL-Wuhan1/W14
1	INW0411	no	**yes**	no	**yes?**	no
2	Branson	no	no	no	no	no
3	Bess	?	no	no	no	no
4	Shirley	?	no	no	no	no
5	T171	?	no	no	no	no
6	MO080104	no	no	no	no	no
7	OH05-200-74	?	no	no	no	no
8	IL04-24668	no	no	no	no	no
9	IL05-4236	?	no	**het**	no	no
10	TN902	no	no	no	no	no
11	NC05-19896	no	no	**het**	no	no
12	X08-18A3	no	no	**het?**	no	no
13	X08-39D	?	no	no	no	no
14	G09408	?	no	no	no	no
15	G09419	no	no	no	no	no
16	G09607	no	no	no	no	no
17	IL06-14262	no	no	no	no	no
18	OH06-150-57	no	no	**het?**	no	no
19	OH06-180-57	?	no	no	**yes?**	no
20	T177	no	no	no	no	no
21	T178	no	no	no	no	no
22	GA021087-9LE33	no	no	no	no	no
23	GA011446-9LE35	no	no	no	no	no
24	MH07-7483	no	no	no	no	no
25	MH07-7474	no	no	no	no	no
26	P04702A1-18	no	no	no	no	no
27	P0537A1-12	?	no	no	no	no
28	P06403A1-4	no	**yes**	**het?**	no	
29	KY02C-3005-25	no	**yes**	no	no	no
30	KY02C-3004-07	no	**yes?**	no	no	no
31	VA05W-251	no	no	no	no	no
32	VA08W-176	no	no	no	no	no
33	VA08W-294	no	no	no	no	no
34	TN1102	no	no	no	no	no
35	NC07-23880	no	no	no	no	no
36	MSULineE5011	no	no	no	no	no
37	MSULineE5024	no	no	**yes**	no	no
38	MSULineE6012	no	no	**yes**	no	no

MARKER DATA

Raleigh, NC
Brown-Guedira

		Fhb Ernie 3Bc	1RS	H13	H9	H25	H26	Bdv2/3
1	INW0411	no	**1RS:1BL**	no	no	no	no	no
2	Branson	no	non 1RS	no	no	no	no	no
3	Bess	no	non 1RS	no	no	no	no	no
4	Shirley	no	**1RS:1BL**	no	no	no	no	no
5	T171	no	non 1RS	no	no		no	no
6	MO080104	no	non 1RS	no	no	no	no	no
7	OH05-200-74	no	**1RS:1AL**	no		no	no	no
8	IL04-24668	no	non 1RS	no	no	no	no	no
9	IL05-4236	no	non 1RS	no	no	no	no	no
10	TN902	no	**1RS:1BL**	no	no	no	no	no
11	NC05-19896	no	non 1RS	no	no	no	no	no
12	X08-18A3	no	non 1RS	no	no	no	no	no
13	X08-39D	no	non 1RS	no	no	no	no	no
14	G09408	no	non 1RS	no	no	no	no	no
15	G09419	no	non 1RS	no	no	no	no	no
16	G09607	no	non 1RS	no	no	no	no	no
17	IL06-14262	no	non 1RS	no	no	no	no	no
18	OH06-150-57	**het?**	non 1RS	no	no	no	no	no
19	OH06-180-57	no	**1RS:1BL**	no	no	no	no	no
20	T177	no	non 1RS	no	no	no	no	no
21	T178	no	non 1RS	no	no	no	no	no
22	GA021087-9LE33	no	**1RS:1BL**	no	no	no	no	no
23	GA011446-9LE35	no	non 1RS	**yes**	no		no	no
24	MH07-7483	no	**1RS:1BL**	no	no	no	no	no
25	MH07-7474	no	non 1RS	no	no	no	no	no
26	P04702A1-18	no	non 1RS	no	no	no	no	**yes**
27	P0537A1-12	no	**1RS:1AL**	no	no	no	no	no
28	P06403A1-4	no	**1RS:1BL**	no	no		no	no
29	KY02C-3005-25	no	**1RS:1AL**	no			no	no
30	KY02C-3004-07	no	**1RS:1AL**	no		no	no	no
31	VA05W-251	no	non 1RS	no	no	no	no	no
32	VA08W-176	no	**1RS:1AL**	no		no	no	no
33	VA08W-294	no	**1RS:1AL**	no		no	no	no
34	TN1102	no	non 1RS	no	no		no	no
35	NC07-23880	no	non 1RS	no	no	no	no	no
36	MSULineE5011	no	non 1RS	no	no	no	no	no
37	MSULineE5024	no	**1RS:1BL**	no	no	no	no	no
38	MSULineE6012	no	non 1RS	no	no	no	no	no

MARKER DATA

Raleigh, NC
Brown-Guedira

***R alleles from P26R61**

		Sbm1*	SBMV (0-9) Cl	Bx7 overexpressing	Glu-A1	Glu-D1
1	INW0411	**yes**	0	no	Ax1 or null	het
2	Branson	**yes**	0	no	Ax2*	2+12
3	Bess	**yes**	0	no	Ax1 or null	2+12
4	Shirley	**yes**	0	no	Ax1 or null	2+12
5	T171	**yes**	0	**yes**	het	5+10
6	MO080104	**yes**	0	no	Ax2*	5+10
7	OH05-200-74	no	3	no	het	2+12
8	IL04-24668	**yes**	0	no	Ax2*	5+10
9	IL05-4236	**yes**	0	no	Ax1 or null	het
10	TN902	**yes**	0	no	Ax2*	2+12
11	NC05-19896	**yes**	0	no	Ax2*	2+12
12	X08-18A3	**yes**	0	no	Ax1 or null	2+12
13	X08-39D	**yes**	0	no	Ax2*	2+12
14	G09408	no	7.5	no	Ax2*	2+12
15	G09419	no	3	no	Ax2*	5+10
16	G09607	**yes**	1	no	Ax1 or null	2+12
17	IL06-14262	**yes**	1	no	Ax2*	5+10
18	OH06-150-57	**yes**	0	no	Ax2*	2+12
19	OH06-180-57	no	4.5	no	Ax1 or null	2+12
20	T177	**yes**	0	**yes**	Ax2*	2+12
21	T178	**yes**	0	**yes**	Ax2*	2+12
22	GA021087-9LE33	no	9	no	Ax1 or null	5+10
23	GA011446-9LE35	**yes**	1.5	no	Ax1 or null	2+12
24	MH07-7483	**het**	0	no	Ax1 or null	5+10
25	MH07-7474	**yes**	2.5	no	Ax1 or null	5+10
26	P04702A1-18	**yes**	1	no	Ax1 or null	5+10
27	P0537A1-12	**yes**	0	**yes**	Ax2*	2+12
28	P06403A1-4	**yes**	0	no	Ax1 or null	2+12
29	KY02C-3005-25	**yes**	0	no	Ax2*	5+10
30	KY02C-3004-07	no	4	no	Ax2*	5+10
31	VA05W-251	**yes**	0	no	Ax2*	2+12
32	VA08W-176	**yes**	0.5	no	Ax2*	2+12
33	VA08W-294	no	3.5	no	Ax2*	2+12
34	TN1102	**het?**	0	no	Ax1 or null	2+12
35	NC07-23880	**yes**	0.5	no	Ax2*	2+12
36	MSULineE5011	**yes**	0	no	Ax2*	2+12
37	MSULineE5024	no	7	no	Ax1 or null	5+10
38	MSULineE6012	**yes**	0	no	Ax1 or null	2+12

2011 Crop
Advanced Milling and Baking Evaluation
Set 2011 A09

2011 Uniform Eastern Winter Wheat Nursery
(W Lafayette, IN; Wooster OH; Warsaw VA)
Entries #: 1150961 – 1150998

A total of 38 samples were grown in a composite of nursery locations and submitted to the laboratory for milling and baking quality evaluations. The standard quality data were compared to the average for the cultivar checks given for this nursery, and quality scores for all entries are adjusted to the check average. A table of observed and historical quality scores is given below.

Within this study, FHB, weathering, and black point grain was detected before cleaning. There were no observable pre-harvest sprouting concerns. Our flour analyses, when compared to the historical data of the given checks, conclude that milling yield, flour protein, and lactic acid SRC were within the expected target range for soft wheat characteristics. The softness equivalence and sucrose SRC absorption were above the range we observe for these cultivars.

The adjusted average values of the provided checks are predicted to have increase milling scores but decreased baking and softness equivalent scores when compared to the historical average. The observed scores for the checks correlated to the historical scores for milling, baking, and softness equivalence at a level of $r=1.0$, $r>0.2$, and $r>0.8$, respectively. The relative rankings and correlations indicate that the results of the milling and softness equivalence quality scores are likely predictive of future results. The baking quality score is lower than usual and may not be as predictive of future breeding performance as in previous trials, probably due to the overall compression of scale for the softness equivalent and solvent retention capacity values.

2011 Uniform Eastern Winter Wheat Nursery

			From Advanced Milling Database Scoring						Predicted from Measured Data					
Lab Number	Entry Number	ENTRY	Milling Quality Score		Baking Quality Score		Softness Equivalent Score		Milling Quality Score		Baking Quality Score		Softness Equivalent Score	
1150962	2	BRANSON	68.43	C	75.15	B	82.59	A	71.09	B	49.34	E	77.58	B
1150963	3	BESS	58.12	D	63.72	C	66.37	C	64.31	C	43.52	E	58.36	D
1150964	4	SHIRLEY	67.21	C	68.72	C	64.46	C	71.82	B	65.50	C	68.80	C
		Average	64.59		69.20		71.14		69.08		52.79		68.25	
		Adjustment Bias for Trial	-4.49		16.41		2.89							
		Diagnostics - Correlations	1.0		0.2		0.8							

Additional Information on Analysis

Thank you for the submission of this trial. Our evaluation is different from previous years. The detailed changes in evaluations can be viewed on our website at: http://www.ars.usda.gov/Research/docs.htm?docid=21964. Please review the data analysis and the descriptions of the summary. Let us know if this is helpful or still requires improvement.

Of the characteristics of quality we measure at the Soft Wheat Quality Laboratory, milling yield is the most reproducible and perhaps most important because it is genetically and environmentally associated with good soft wheat flour quality. The average milling yield of the checks was 70.6% and 13 entries were greater than this average with TN1102 (72.3%), MH07-7483 (72.1%), GA021087-9LE33 (72.1%), and MSU LINE E6012 (72.1%) being tops amongst the nursery set.

The next most heritable trait in the quality evaluations is softness equivalent. The average softness equivalence of the checks was 59.0% compared to that of the nursery's average of 58.3%. Test lines MH07-7483, T178, and GA021087-9LE33 ranked the

highest amongst all samples. Although all of the lines are acceptable for this trait, line G09419, has the least softness equivalence value at 50.9%.

Sucrose SRC is a measure of arabinoxylan content, which can strongly affect water absorption in baked products and probably is the best predictor of cookie quality. Sucrose SRC typically increases in wheat samples with lower flour yield and lower softness equivalent. The cross hydration of gliadins by sucrose also causes sucrose SRC values to be correlated to flour protein and lactic acid SRC. Soft wheat flours for cookies typically have a target of 95% or less and as a whole; the nursery's average was above this target range with a value of 99.1%. Only 9 samples were below 95% with MSU LINE E5011 having the lowest value at 89.3%. Others to be noted for low sucrose include TN1102, IL04-24668, and MSU LINE E6012. Sample 04702A1-18 had the highest sucrose SRC absorption at 110.5% resulting in a small cookie diameter of 17.7cm.

Lactic acid SRC is a good measure of gluten strength. The lactic acid SRC is also correlated to flour protein concentration, but the effect is dependent on genotypes and growing conditions. The cumulative check average of lactic acid SRC was 95.4%, whereas this trial's average was 102.1%. Entry MH07-7474 had the highest gluten strength at 137.3% and may be of interest for cracker production. Based on the analysis, there are 7 strong gluten genotypes with good milling yield. The strong gluten lines with the best combinations of quality include GA021087-9LE33, MSU LINE E6012, and IL04-24668.

To select the best lines for milling and baking quality, we sequentially sorted for flour yield and selected all lines with greater flour yield than the nursery average. We then repeated the operation for softness equivalent and sucrose SRC, selecting the lines that were better than average in each case. Next, we discarded the weakest gluten lines to present a more accurate evaluation of the cookies. After the sort, the best test lines with the most balanced milling and baking qualities consist of IL04-24668, IL06-14262, and MSU LINE E6012.

Please contact me if you have questions concerning this trial.

Best regards,
Tony Karcher

ADVANCED NURSERY EVALUATION
FOR SOFT WHEAT MILLING AND BAKING QUALITY
2011 CROP

Locations: W Lafayette IN; Wooster OH; Warsaw VA

Lab Number	Entry Number	ENTRY	Modified Milling Quality Score		Modified Baking Quality Score		Modified Softness Equivalent Score		Test Weight (LB/BU)		Whole Grain Protein (at 12%)		Whole Grain Hardness (0-100)		Flour Yield (%)		Softness Equivalent (%)		Flour Protein (at 14%)		As Is Lactic Acid SRC (%)		Sucrose SRC (%)		Cookie Diameter (cm)		Top Grade (0-9)
1150961	1	INW0411	55.23	D	48.73	E	59.90	D	59.59		12.16		26.10		68.76	q	55.06	q	9.20	q	98.93		104.61	q	18.25	q	3
1150962	2	BRANSON	66.60	C	65.75	C	80.47	A	60.49		11.31		23.46		71.05		62.34	+	8.45		104.85	s	101.15		18.60		3
1150963	3	BESS	59.82	D	59.93	D	61.25	C	61.87		11.12		20.50		69.68		55.54	q	8.54		95.43		100.54		18.57		4
1150964	4	SHIRLEY	67.33	C	81.91	A	71.69	B	59.41		10.85		24.37		71.19		59.24		8.00		85.80	w	97.72		19.58	+	4
1150965	5	T171	60.73	C	67.20	C	70.69	B	60.83		10.57		27.61		69.86		58.88		8.37		102.61		98.87		18.71		2
1150966	6	MO 080104	54.41	D	52.04	D	71.05	B	62.94		11.21		29.81		68.59	q	59.01		8.41		120.63	s	106.61	q	18.33	q	2
1150967	7	OH05-200-74	53.70	D	57.45	D	68.62	C	59.50		11.01		29.00		68.45	q	58.15		8.16		100.24		98.64		18.03	q	1
1150968	8	IL04-24668	69.83	C	76.21	B	73.21	B	62.26		11.37		20.62		71.70	+	59.77		8.70		117.87	s	92.43	+	18.74		7
1150969	9	IL05-4236	65.74	C	64.00	C	73.35	B	61.94		10.75		20.08		70.87		59.82		8.07		87.73	w	99.48		18.45	q	6
1150970	10	TN902	69.85	C	61.63	C	72.39	B	60.56		10.35		22.01		71.70	+	59.48		8.16		76.08	w	101.79		18.52	q	3
1150971	11	NC05-19896	69.12	C	68.03	C	63.06	C	61.67		11.19		25.70		71.55		56.18	q	7.66	+	114.29	s	95.12	+	18.52	q	4
1150972	12	X08-18A3	52.31	D	43.65	E	69.57	C	61.42		10.28		31.23		68.17	q	58.49		8.64		93.95		109.54	q	18.07	q	3
1150973	13	X08-39D	49.36	E	50.08	D	68.39	C	62.60		11.31		32.04		67.58	q	58.07		7.92		90.63		101.29		17.73	q	2
1150974	14	G09408	59.97	D	62.37	C	70.90	B	61.01		10.90		23.43		69.71		58.95		8.81	q	89.65		98.45		18.37	q	5
1150975	15	G09419	56.73	D	50.80	D	48.08	E	62.04		11.72		28.64		69.06	q	50.88	q	8.16		115.40	s	102.50		18.36	q	6
1150976	16	G09607	63.85	C	70.11	B	67.92	C	61.34		10.64		19.95		70.49		57.90		8.18		97.80		96.09	+	18.70		6
1150977	17	IL06-14262	68.07	C	91.75	A	79.71	B	61.31		10.13		18.70		71.34		62.07	+	7.86		108.01	s	92.74	+	19.63	+	2
1150978	18	OH06-150-57	66.78	C	67.80	C	65.45	C	61.98		10.55		24.64		71.08		57.03		8.20		105.93	s	95.53	+	18.55	q	7
1150979	19	OH06-180-57	58.89	D	69.46	C	69.00	C	60.47		10.93		27.31		69.50	q	58.28		8.26		85.10	w	95.75	+	18.61		3
1150980	20	T177	68.48	C	87.78	A	78.22	B	61.75		10.33		18.80		71.42		61.55	+	8.09		97.53		93.27	+	19.45	+	4
1150981	21	T178	71.17	B	89.42	A	81.83	A	61.14		10.48		16.50		71.97	+	62.82	+	7.95		94.92		93.31	+	19.48	+	3
1150982	22	GA021087-9LE33	71.79	B	66.38	C	81.41	A	61.41		11.49		33.10		72.09	+	62.67	+	8.85	q	103.60	s	99.58		18.53	q	3
1150983	23	GA011446-9LE35	49.43	E	57.60	D	58.59	D	61.12		10.99		28.86		67.59	q	54.60	q	8.73		109.38	s	98.76		18.33	q	2
1150984	24	MH07-7483	71.97	B	77.91	B	84.10	A	60.13		10.68		26.01		72.13	+	63.62	+	8.06		97.58		97.80		19.04		5
1150985	25	MH07-7474	62.61	C	45.95	E	60.55	C	61.37		11.94		27.98		70.24		55.29	q	9.18	q	137.31	s	102.03		17.81	q	4
1150986	26	04702A1-18	59.99	D	34.49	F	59.60	D	60.82		11.58		20.45		69.72		54.96	q	8.67		108.53	s	110.54	q	17.74	q	4
1150987	27	0537A1-12	61.71	C	60.92	C	68.05	C	61.96		11.10		29.26		70.06		57.95		8.54		110.65	s	103.60	q	18.77		2
1150988	28	06403A1-4	52.00	D	54.31	D	67.14	C	61.13		11.78		35.54		68.11	q	57.63		9.09	q	103.07	s	103.62	q	18.38	q	2
1150989	29	KY02C-3005-25	51.40	D	42.69	E	55.07	D	63.73		11.59		31.91		67.99	q	53.36	q	8.87	q	98.73		104.57	q	17.90	q	4
1150990	30	KY02C-3004-07	56.98	D	58.24	D	73.70	B	63.02		10.96		26.02		69.11	q	59.95		8.44		109.92	s	106.55	q	18.71		2
1150991	31	VA05W-251	64.36	C	64.89	C	52.89	D	61.55		10.61		25.84		70.60		52.59	q	8.59		89.85		95.75	+	18.68		7
1150992	32	VA08W-176	60.54	C	72.42	B	73.25	B	63.02		10.65		25.56		69.83		59.79		8.17		101.72		94.96	+	18.65		6
1150993	33	VA08W-294	53.18	D	45.79	E	68.09	C	62.33		11.20		24.01		68.35	q	57.96		8.19		120.31	s	105.23	q	17.82	q	3
1150994	34	TN1102	72.83	B	75.15	B	71.81	B	61.20		10.65		19.82		72.30	+	59.28		8.39		97.36		92.28	+	18.65		3
1150995	35	NC07-23880	60.11	C	65.42	C	73.16	B	62.53		11.84		26.42		69.74		59.76		9.04	q	113.25	s	98.78		18.59		2
1150996	36	MSU LINE E5011	71.09	B	88.38	A	80.27	A	59.57		10.65		19.72		71.95	+	62.27	+	7.92		92.17		89.33	+	19.08		5
1150997	37	MSU LINE E5024	63.79	C	61.39	C	60.06	C	61.54		11.43		27.27		70.48		55.12	q	8.85	q	99.41		93.37	+	18.09	q	4
1150998	38	MSU LINE E6012	71.67	B	76.44	B	72.12	B	61.08		10.85		22.65		72.07	+	59.39		8.49		102.80	s	92.58	+	18.77		5
		Average	62.20		64.06		69.07		61.41		11.03		25.29		70.16		58.31		8.42		102.08		99.07		18.55		4

Footnotes on foloowing page

Footnotes

'q' - questionable or undesirable quality. Marked on lines greater than a standard deviation from the mean of the checks in a unpreferred level.

'+' - Above average quality marked on lines with greater than a standard deviation away from mean of the checks in a preferred level

's' - strong gluten. Greater than one standard deviation more than the mean of checks.

'w' - weak gluten. Greater than one standard deviation less than the mean of the check.

ADVANCED NURSERY EVALUATION
FOR SOFT WHEAT MILLING AND BAKING QUALITY
2011 CROP

Adjustments and Quality Scores are from the Advanced Milling Database, Version 3/14/2011
Select as many checks that are available

			From Advanced Milling Database Scoring						Predicted from Measured Data						Data Transferred from Scores Sheet																					
Lab Number	Entry Number	ENTRY	Milling Quality Score		Baking Quality Score		Softness Equivalent Score		Milling Quality Score		Baking Quality Score		Softness Equivalent Score		Test Weight (LB/BU)		Whole Wheat Grain (at 12%)		Hardness (0-100)		Flour Yield (%)		Softness Equivalent (%)		Flour Protein (at 14%)		As Is Lactic Acid SRC (%)		Sucrose SRC (%)		Cookie Diameter (cm)		Top Grade (0-9)	
1150962	2	BRANSON	68.43	C	75.15	B	82.59	A	71.09	B	49.34	E	77.58	B	60.49		11.31		23.46		71.05		62.34		8.45		104.85		101.15		18.60		3	
1150963	3	BESS	58.12	D	63.72	C	66.37	C	64.31	C	43.52	E	58.36	D	61.87		11.12		20.50		69.68		55.54		8.54		95.43		100.54		18.57		4	
1150964	4	SHIRLEY	67.21	C	68.72	C	64.46	C	71.82	B	65.50	C	68.80	C	59.41		10.85		24.37		71.19		59.24		8.00		85.80		97.72		19.58		4	
		Average	64.59		69.20		71.14		69.08		52.79		68.25		60.59		11.09		22.78		70.64		59.04		8.33		95.36		99.80		18.92		3.7	
		Adjustment Bias for Trial	-4.49		16.41		2.89																												
		Diagnostics - Correlations	1.0		0.2		0.8																												
		Standard Errors Used for Grading*																			0.96		2.09		0.48		7.27		3.18		0.36			

* Standard errors derive from 5 state, 2 year study of 187 cultivars in the association analysis of soft wheat cultivars

Prediction Models

SE Score= -98.66 + 2.827*SE

BQ Score= -129.74 + 14.267*Dia - 1.279*Suc - 1.488*Fprotein as is moist + 0.891*SE

MY Score= -282.08 + 4.971*FYLD

ADVANCED EVALUATION
FOR SOFT WHEAT MILLING AND BAKING QUALITY
2011 CROP

GRAIN CONDITION SCALE

0	None
1	up to 10%
2	10% to 40%
3	above 40%

Lab Number	Entry Number	ENTRY	FHB (0-3)	Weathering (0-3)	Sprouting (0-3)	Black Point (0-3)	Shriveling After Cleaning (0-3)	Comments
1150961	1	INW0411	0	1	0	1	1	
1150962	2	BRANSON	1	0	1	0	0	CHECK
1150963	3	BESS	0	1	0	1	0	CHECK
1150964	4	SHIRLEY	1	1	0	1	1	CHECK
1150965	5	T171	1	1	0	1	0	
1150966	6	MO 080104	0	1	0	1	0	
1150967	7	OH05-200-74	0	1	0	1	1	
1150968	8	IL04-24668	1	0	0	1	0	
1150969	9	IL05-4236	1	1	0	1	0	
1150970	10	TN902	1	1	0	1	1	
1150971	11	NC05-19896	0	1	0	0	1	
1150972	12	X08-18A3	1	2	0	1	2	
1150973	13	X08-39D	0	1	0	0	0	
1150974	14	G09408	0	1	0	0	1	
1150975	15	G09419	0	1	0	1	1	
1150976	16	G09607	0	1	0	0	0	
1150977	17	IL06-14262	0	0	0	0	0	
1150978	18	OH06-150-57	0	1	0	1	1	
1150979	19	OH06-180-57	1	1	0	1	1	
1150980	20	T177	0	1	0	0	0	
1150981	21	T178	1	1	0	0	0	
1150982	22	GA021087-9LE33	0	2	0	0	1	
1150983	23	GA011446-9LE35	1	1	0	1	1	
1150984	24	MH07-7483	0	1	0	1	1	
1150985	25	MH07-7474	0	1	0	0	1	
1150986	26	04702A1-18	1	1	0	1	1	
1150987	27	0537A1-12	0	1	0	0	0	
1150988	28	06403A1-4	0	1	0	1	1	
1150989	29	KY02C-3005-25	1	1	0	1	0	
1150990	30	KY02C-3004-07	1	1	0	1	1	
1150991	31	VA05W-251	1	1	0	0	1	
1150992	32	VA08W-176	1	1	0	1	0	
1150993	33	VA08W-294	1	1	0	1	0	
1150994	34	TN1102	0	1	0	1	1	
1150995	35	NC07-23880	1	1	0	1	1	
1150996	36	MSU LINE E5011	0	1	0	0	1	
1150997	37	MSU LINE E5024	1	1	0	0	1	
1150998	38	MSU LINE E6012	1	1	0	0	0	