UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

State Agricultural Experiment Stations, Cooperating

2013 - 2014

UNIFORM SOUTHERN SOFT RED WINTER WHEAT NURSERY

Report

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USSRWWN 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
Small Grains & Potato Germplasm Research
1691 S. 2700 W.
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November 2014

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2013-2014 UNIFORM SOUTHERN SOFT RED WINTER WHEAT NURSERY
LIST OF ENTRIES AND PEDIGREES

Entry No.	Cultivar/ Designation	Pedigree	Contributor	1st Year in Nursery
1	AGS 2000	Pio.2555/PF84301//FL 302 (formerly GA89482E7)	Check	97-98
2	USG 3555	VA94-52-60/Pio2643//USG3209 (formerly VA02W-555)	Check	04-05
3	Jamestown	Roane/Pioneer Brand 2691 (formerly VA02W-370)	Check	04-05
4	USG 3120	SS524/GA96004//AGS2000 (formerly GA991209-6E33)	Check	07-08
5	KWS013	VA96W-49/AGS2000/VA98W-430	Murche	12-13
6	LA03200E-2	NC98-24710/P26R61	Harrison	12-13
7	LA05130D-P5	LA98149BUB-3-4-B/SS8641	Harrison	12-13
8	MD04W249-11-7	MV8-29/25R42	Cooper	12-13
9	NC09-20768	NC00-16203//P26R24/NC96-13965	Murphy	13-14
10	NC09-20986	NC00-15332/VA01-476//Dominion	Murphy	13-14
11	NC09-22402	NC99-18235/NC00-16203//Dominion	Murphy	13-14
12	NC8170-4-3	NC03-11458/Bess//SS8641	Murphy	13-14
13	VA10W-96	FG95195(SWN6828-6AP/C9766//Mason/3/Morey sib)/Jamestown	Griffey	13-14
14	VA11W-108	P25R47/Jamestown	Griffey	13-14
15	VA11W-230	SS520(FFR555W/GA-Gore/GF941208-2E35)//Jamestown	Griffey	13-14
16	VA11W-106	P25R47/Jamestown	Griffey	13-14
17	TN1401	MO0-3701/TN603//OH708/[Foster/P2628//IL90-6364]-F6	West	13-14
18	KWS026	B990081//M00-3701/M01-4377	Murche	13-14
19	KWS027	X00-1079/Branson	Murche	13-14
20	OK11754WF	(TOB/ERA//TOB/CNO67/3/PLO/4/VEE#5/5/KAUZ/6/CNDO/R143//ENTE/MEX I2/3/…)/OVERLEY//(JGR*2//WL711*6/T. monococcum)	Carver	13-14
21	TXE21	961565-2E46/AGS2485//96229-3A41	Sutton	13-14
22	MDC07026-12-30	SS8641//MCCormick*2/Ning7840	Cooper	13-14
23	MD04W8-12-3	Chesapeake/25R42	Cooper	13-14
24	GA03564-12E6	SS8641/4/A2000*3/931433//P2684/3*A2000	Johnson	13-14
25	GA071630-12LE9	GA011636/2*GA991371-12	Johnson	13-14
26	GA04434-12LE28	GA961565-2E46/AGS2485//S8641	Johnson	13-14
27	GA04417-12E33	GA961565-2E46/AGS2485//S8641	Johnson	13-14
28	AR04002-3	AR800-1-3-1/AR93005-6-5	Mason	13-14
29	AR04008-5	AR93005-6-5/C9375	Mason	13-14
30	LA05145D-21	Jamestown/LA97113UC-124	Harrison	13-14
31	LA06027E-P7	AGS2010/AGS2060	Harrison	13-14
32	08850-2	AGS2000/92226E2-5-3	Obert	13-14
33	08577-4	X00-1079/M98-2023	Obert	13-14

LOCATION NOTES

Belle Mina, Alabama

Cooperator:	Kathy Glass Auburn University
Planted:	November 5, 2013
Harvested:	June 23, 2014
Fertilizer:	80 N

Fayetteville, Arkansas

Cooperator:	Gene Milus University of Arkansas
Notes:	Stripe rust data.

Stuttgart, Arkansas

Cooperator:	Esten Mason University of Arkansas
Notes:	Nursery failure – no data to report.

Quincy, Florida

Cooperators:	Md. Ali Babar University of Florida
Notes:	We had 12 inches of rain in April with some strong wind which caused early lodging and did damage yield. The lines which were standing or had late lodging showed pretty good yield. We had low LR in our field, however, we had powdery mildew, Septoria and Xanthomonas. We rated Septoria and Xanthomonas together and added to the field as “leaf disease complex”. Test weights are lower than expected except few.

Griffin, Georgia

Cooperator:	Jerry Johnson, Dan Bland, Steve Sutton, John Youmans University of Georgia
Planted:	November 5, 2013
Harvested:	June 10, 2014
Fertilizer:	20 N preplant; 75 N topdress

Plains, Georgia

Cooperator:	Jerry Johnson, Dan Bland, Steve Sutton, John Youmans University of Georgia
Planted:	November 15, 2013
Harvested:	June 3, 2014
Fertilizer:	20 N preplant; 75 N topdress

Champaign, Illinois

Cooperator:	Jana Murche KWS Cereals USA
Planted:	October 12, 2013
Harvested:	July 17, 2014

Fertilizer: 125 N
Notes: Trial was affected by severe winterkill so the data needs to be used carefully. I feel comfortable with the disease score, but all the rest was influenced by the winter damage. Third rep was lost due to water damage.

Harrisburg, Illinois
Cooperator: Jana Murche
KWS Cereals USA
Planted: October 22, 2013
Harvested: June 27, 2014
Fertilizer: 20 GPA 28% + 18 GPA 28%
Notes: Results were affected by severe winterkill. Trial precision and error variance nevertheless were good.

Harrisburg, Illinois
Cooperator: Don Obert
Limagrain Cereal Seeds
Planted: October 22, 2013
Harvested: June 27, 2014

Liberty, Illinois
Cooperator: Don Obert
Limagrain Cereal Seeds
Planted: October 22, 2013
Harvested: July 4, 2014

Battle Ground, Indiana
Cooperator: Sam Brown
Trinity Wheat Research
Planted: October 11, 2013
Harvested: July 3, 2014
Fertilizer: fall 24-24-24, spring 90-0-0
Notes: Very cold winter, reaching -18 degrees F. Generally at least an inch of snow covering the plots. 60+inches of snow for us this year, which pushes the all-time record high amounts. Normal March and April, but an 80+ degree warm but very dry period the last week of April and the first week of May. Then cool temperatures with just adequate moisture and with low humidity which further suppressed disease development. Missed nearly all FHB development here at BG,IN. The crop finished nicely in June with best TWs and Yd ever! No two years are ever alike! Heading was 10days later than many of the last few years.

Lafayette, Indiana
Cooperator: Don Obert
Limagrain Cereal Seeds
Planted: September 28, 2013
Harvested: July 7, 2014
Fertilizer: 60-20-30 and 44-0-0

West Lafayette, Indiana

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

Lexington, Kentucky

Cooperator:	Dave Van Sanford University of Kentucky
Planted:	October 28, 2013
Harvested:	July 2, 2014
Fertilizer:	P & K according to soil tests; 100 N in applications
Notes:	Very rough winter followed by late, cool spring with ideal filling conditions. Very little disease except for some natural scab infection. The Logan Co. location suffered from major combine problems that rendered the data useless.

Baton Rouge, Louisiana

Cooperator:	Stephen Harrison Louisiana State University
Notes:	Heavy rainfall (6+ inches in 6 days) compromised test weights, particularly for the earliest entries. Very low disease pressure and moderate lodging. Leaf rust includes one rep of an inoculated stem rust nursery and two reps of plots.

Winnsboro, Louisiana

Cooperator:	Stephen Harrison Louisiana State University
Notes:	Heavy rainfall (6+ inches in 6 days) compromised test weights, particularly for the earliest entries. Very low disease pressure and moderate lodging. Relative Maturity is average of two ratings before and after flowering: 0=very early; 9=very late.

Queenstown, Maryland

Cooperator:	Ben Conway, Aaron Cooper University of Maryland
Notes:	There were some combine problems in part of the nursery which resulted in some missing data.

St. Paul, Minnesota

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

Brooksville, Mississippi

Cooperator:	Brad Burgess Mississippi State University
Planted:	October 28, 2013
Harvested:	July 2, 2014
Fertilizer:	Preplant 13-13-13 @300lbs; topdress N @100lbs (urea)

Notes: Spring rains did not allow second N application. At maturity it rained every 3-5 days which delayed harvested by 3 weeks. Please consider the delay in harvest when looking at yields from this location.

Kinston, North Carolina

Cooperator: Paul Murphy
North Carolina State University

Notes: Hessian fly (likely Biotype L) in the fall was an important factor. Cold winter and spring. Leaf rust came in late and heavy. There was a whiff of manganese deficiency and take-all. A low CV by Kinston standards, nevertheless.

Laurel Springs and Raleigh, North Carolina

Cooperator: David Marshall, Myron Fountain
USDA-ARS, Plant Science Research

Notes: Growth habit: 0=very upright/spring; 9=very prostrate/winter. Winter stress: mid-winter rating of red/purpling/yellowing; 0=no discoloration, 9=severe.

Raleigh, North Carolina

Cooperator: Christina Cowger
USDA-ARS, Plant Science Research

Notes: Eastern Septoria Nursery data.

Wooster, Ohio

Cooperator: Byung-Kee Baik, Anthony Karcher
USDA-ARS, Soft Wheat Quality

Notes: Milling and baking quality data.

Enid, Oklahoma

Cooperator: Brett Carver
Oklahoma State University

Notes: Acid soil tolerance data.

Knoxville, Tennessee

Cooperator: Dennis West
University of Tennessee

Planted: October 21, 2013

Harvested: June 19, 2014

Fertilizer: 90-30-30

Notes: Metribuzin (Sencor) was applied for cheat control on 12/5/13, rate 5oz/a. Following application cold and wet conditions contributed to herbicide injury and stand loss. Injury ratings were made on January 20 and stand rating on March 11. Metribuzin injury ratings are probably the most valuable data from this location.

Farmersville, Texas

Cooperator: Russell Sutton
Texas A&M

Planted: November 20, 2013

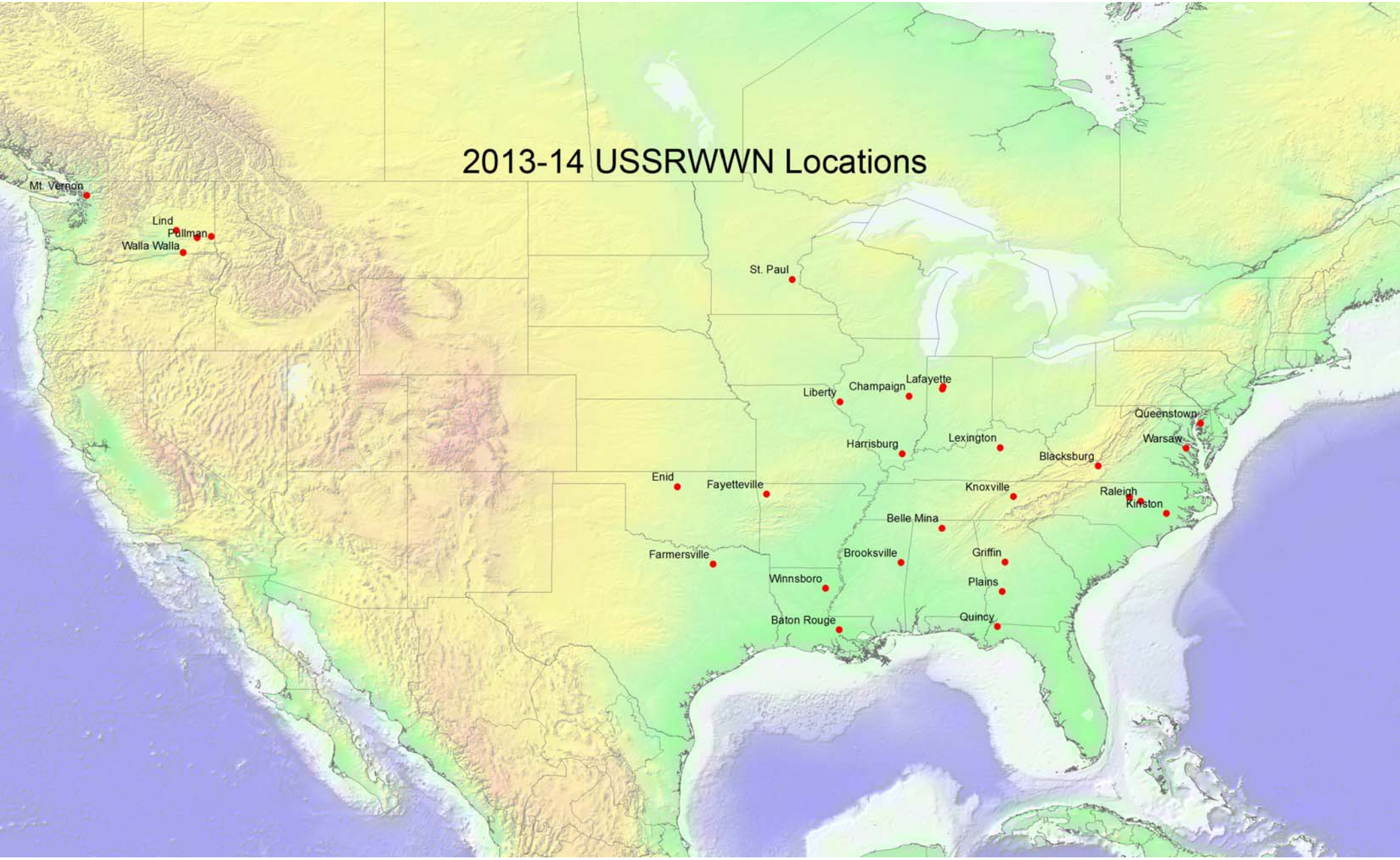
Harvested: June 18, 2014
Fertilizer: 120 N, 25 P
Notes: We were dry through January, then had a major freeze on March 2nd that burned back all growth to the ground. The earlier types did not growth back as well.

Blacksburg, Virginia
Cooperator: Carl Griffey
Virginia Tech

Warsaw, Virginia
Cooperator: Carl Griffey
Virginia Tech

Mt. Vernon, Pullman, Walla Walla, Lind, Washington
Cooperator: Xianming Chen
USDA-ARS, Wheat Genetics, Quality, Physiology, & Disease Research
Notes: Seedling and adult stripe rust data.

Central Ferry, Pullman, Washington
Cooperator: Kim Campbell
USDA-ARS, Wheat Genetics, Quality, Physiology, & Disease Research
Notes: Stripe rust came in late this year. The most reliable ratings are from Pullman. If a line is rated as susceptible early, it is quite susceptible. The cephalosporium stripe rating was a visual 1-3 based on stunting and leaf symptoms in an inoculated nursery, compared to the susceptible check cultivar, Stephens.


2013-14 USSRWWN Locations
Mt. Vernon
Lind
Pullman
Walla Walla
St. Paul
Liberty
Champaign
Lafayette
Queenstown
Warsaw
Harrisburg
Lexington
Blacksburg
Enid
Fayetteville
Knoxville
Raleigh
Kinston
Belle Mina
Farmersville
Brooksville
Griffin
Winnsboro
Plains
Baton Rouge
Quincy

YIELD (bu/acre)

		Belle Mina		Quincy		Griffin		Plains		Champaign		Harrisburg	
		AL	ab	FL	a	GA	ab	GA	ab	IL		IL	ab
		Glass	rank	Babar	rank	Johnson	rank	Johnson	rank	Murche	rank	Murche	rank
1	AGS 2000	67.3	19	52.3	22	71.4	32	68.6	28	12.1	29	41.7	23
2	USG 3555	66.0	24	73.0	5	108.8	6	64.0	30			48.5	16
3	Jamestown	64.3	28	47.0	27	109.0	5	91.1	13	6.8	31	42.7	22
4	USG 3120	67.5	16	64.7	13	91.9	22	89.6	16	29.3	24	41.3	24
5	KWS013	71.0	10	33.3	33	98.0	15	80.3	24	41.3	15	48.9	15
6	LA03200E-2	67.4	17	75.7	3	111.5	2	90.0	15	31.9	21	44.9	21
7	LA05130D-P5	65.8	25	67.0	8	106.7	8	89.2	17	33.0	19	39.0	32
8	MD04W249-11-7	66.5	21	78.3	2	91.6	23	65.5	29	31.3	22	51.7	9
9	NC09-20768	69.4	13	37.0	31	86.5	27	86.8	19	11.9	30	39.9	27
10	NC09-20986	66.1	23	81.3	1	94.7	17	102.9	5			48.9	14
11	NC09-22402	73.5	2	46.7	28	101.8	12	96.6	11	27.8	25	45.2	20
12	NC8170-4-3	67.4	17	36.7	32	92.7	20	81.9	23	16.5	28	47.2	17
13	VA10W-96	72.3	6	57.7	18	110.1	3	102.9	5	35.7	17	39.4	29
14	VA11W-108	71.2	8	65.0	11	105.8	9	97.9	10	63.6	10	64.4	1
15	VA11W-230	64.0	29	63.7	14	93.4	19	118.5	1	35.2	18	52.4	8
16	VA11W-106	71.9	7	49.7	24	104.4	11	101.4	7	74.5	6	61.4	3
17	TN1401	65.5	26	55.0	21	86.6	26	85.6	20	66.7	9	50.1	13
18	KWS026	67.6	15	59.3	16	98.9	13	88.0	18	74.5	5	62.2	2
19	KWS027	70.5	11	66.3	9	92.3	21	58.7	31	57.4	11	51.1	10
20	OK11754WF	59.7	33	38.7	30	74.6	30	80.2	25	85.5	2	46.4	19
21	TXE21	72.6	4	47.7	26	112.0	1	103.0	4	22.4	27	37.3	33
22	MDC07026-12-30	72.8	3	48.0	25	57.1	33	52.1	32	83.9	3	60.3	4
23	MD04W8-12-3	67.1	20	58.7	17	95.3	16	77.3	26	48.1	13	46.7	18
24	GA03564-12E6	72.6	4	65.3	10	108.6	7	110.9	2	90.6	1	39.9	27
25	GA071630-12LE9	69.7	12	57.3	19	87.5	25	91.8	12	32.5	20	40.6	25
26	GA04434-12LE28	71.2	8	72.3	6	110.1	3	100.6	8	27.5	26	40.5	26
27	GA04417-12E33	66.4	22	73.7	4	105.6	10	103.2	3	44.2	14	39.2	31
28	AR04002-3	69.0	14	61.3	15	84.6	28	85.0	21	77.7	4	50.9	11
29	AR04008-5	62.8	30	44.0	29	77.9	29	72.7	27	40.1	16	53.8	6
30	LA05145D-21	64.5	27	65.0	11	98.3	14	100.5	9	67.0	8	50.6	12
31	LA06027E-P7	61.9	32	56.7	20	90.6	24	90.2	14	29.9	23	39.4	30
32	08850-2	62.3	31	68.3	7	94.1	18	84.7	22	55.3	12	53.4	7
33	08577-4	74.6	1	50.0	23	73.1	31	49.2	33	67.2	7	58.0	5
LOCATION MEANS		68.0		58.1		94.7		86.7		45.8		47.8	
LSD (.05)		6.9		(.01) 3.1		11		14.1		14.9		7.42	
CV %		7.5		12		7.1		7.9		13.8		9.42	
Reps		3				3		2		2		3	
Harvest Plot Area (sq.ft.)		100				50		50		50		72.5	

YIELD (bu/acre)

		Harrisburg		Liberty		Battle Ground		Lafayette		Lexington		Baton Rouge	
		IL a		IL		IN b		IN		KY ab		LA a	
		Obert	rank	Obert	rank	Brown	rank	Obert	rank	Van Sanford	rank	Harrison	rank
1	AGS 2000	38.5	28	67.0	19	90.4	24	66.4	32	102.3	3	87.9	3
2	USG 3555	58.2	13	70.4	14	106.4	8	87.3	11	73.9	33	79.0	12
3	Jamestown	58.5	12	83.7	3	85.2	30	83.9	19	86.2	22	86.7	6
4	USG 3120	57.4	14	66.3	20	95.8	19	87.2	12	88.8	14	87.8	4
5	KWS013	80.2	1	67.0	18	119.9	1	99.1	1	88.1	17	80.8	10
6	LA03200E-2	43.3	23	76.9	6	104.5	11	84.6	17	98.2	7	74.8	19
7	LA05130D-P5	45.1	20	53.6	29	90.0	25	87.1	13	83.4	26	75.9	18
8	MD04W249-11-7	61.7	9	57.4	27	106.7	7	83.0	20	79.8	30	71.3	24
9	NC09-20768	52.0	18	69.4	16	86.2	29	81.0	22	81.5	28	71.0	26
10	NC09-20986	44.9	21	74.1	11	88.5	26	71.1	30	105.1	2	77.1	15
11	NC09-22402	37.7	29	56.1	28	105.9	10	79.0	23	85.0	24	79.3	11
12	NC8170-4-3	66.5	5	58.5	25	96.2	18	86.5	14	87.7	18	65.2	29
13	VA10W-96	44.4	22	69.7	15	99.9	15	88.5	8	85.9	23	85.0	7
14	VA11W-108	69.5	2	70.7	13	112.3	3	93.0	3	99.1	6	78.5	13
15	VA11W-230	58.8	11	68.5	17	101.9	12	92.4	5	90.1	13	77.1	14
16	VA11W-106	67.3	3	82.4	4	107.8	6	97.7	2	87.1	20	86.9	5
17	TN1401	52.6	17	62.3	23	97.7	16	86.1	15	80.6	29	72.1	23
18	KWS026	66.6	4	88.5	2	108.4	5	88.7	7	111.7	1	71.1	25
19	KWS027	55.6	15	65.6	21	109.8	4	70.5	31	102.1	4	72.5	22
20	OK11754WF	59.2	10	75.8	9	95.0	20	73.4	27	97.2	8	63.4	31
21	TXE21	25.9	33	45.8	31	83.2	31	72.8	28	76.4	32	83.5	8
22	MDC07026-12-30	62.5	7	101.9	1	100.1	14	88.4	9	84.1	25	68.2	28
23	MD04W8-12-3	41.1	25	74.9	10	93.5	22	74.7	26	79.0	31	62.8	32
24	GA03564-12E6	33.6	30	57.6	26	82.2	32	92.2	6	95.9	9	88.6	2
25	GA071630-12LE9	30.6	31	49.7	30	94.8	21	85.5	16	88.6	16	81.5	9
26	GA04434-12LE28	47.3	19	37.5	33	87.5	28	92.8	4	87.5	19	89.6	1
27	GA04417-12E33	39.1	27	43.4	32	71.5	33	84.6	18	86.9	21	73.6	21
28	AR04002-3	62.9	6	81.4	5	87.6	27	88.1	10	82.6	27	76.7	16
29	AR04008-5	62.2	8	76.5	7	92.7	23	71.4	29	88.7	15	63.8	30
30	LA05145D-21	39.7	26	72.0	12	96.9	17	65.6	33	93.5	10	76.6	17
31	LA06027E-P7	30.2	32	59.5	24	101.5	13	78.0	24	90.8	11	49.5	33
32	08850-2	54.6	16	65.2	22	106.2	9	77.8	25	90.3	12	74.1	20
33	08577-4	42.2	24	76.4	8	117.0	2	82.8	21	101.0	5	70.4	27
LOCATION MEANS		51.2		67.5		97.7		83.1		89.7		75.8	
LSD (.05)						12.6		17.5		11.9		(.10)16.9	
CV %						9.5		10.2		5.8		11	
Reps		1		1		3		2		2		2	
Harvest Plot Area (sq.ft.)		45		45		32		45		45		70	

YIELD (bu/acre)

		Winnsboro		Brooksville		Queenstown		Kinston		Raleigh		Knoxville	
		LA	ab	MS	a	MD	a	NC	ab	NC	a	TN	a
		Harrison	rank	Burgess	rank	Conway	rank	Murphy	rank	Marshall	rank	West	rank
1	AGS 2000	87.6	18	57.6	16	69.4	24	75.6	17	80.1	22	85.2	6
2	USG 3555	83.4	25	57.0	17	72.0	21	65.4	28	75.2	27	49.0	33
3	Jamestown	79.6	29	47.5	31	67.9	28	74.0	21	71.3	28	70.6	26
4	USG 3120	94.8	5	54.3	23	78.3	10	80.8	8	90.1	8	82.2	10
5	KWS013	78.5	31	62.0	6	91.9	1	76.2	16	84.7	16	92.7	1
6	LA03200E-2	90.9	8	60.3	10	86.3	4	72.5	22	83.9	18	76.5	14
7	LA05130D-P5	88.4	13	51.9	26			75.5	18	89.3	10	74.7	18
8	MD04W249-11-7	95.0	4	58.4	12	84.3	5	68.4	24	100.8	2	71.1	25
9	NC09-20768	73.8	33	54.4	22	89.6	3	66.4	27	92.3	7	65.5	30
10	NC09-20986	82.0	26	60.4	9	79.6	8	79.8	11	88.0	12	72.7	22
11	NC09-22402	86.7	19	66.0	2	82.3	7	81.3	7	83.4	20	89.0	4
12	NC8170-4-3	83.6	24	56.5	18	83.1	6	82.4	6	76.8	24	67.2	28
13	VA10W-96	83.7	23	55.7	20	79.3	9	77.8	13	86.4	14	57.3	32
14	VA11W-108	90.9	7	53.3	24	91.8	2	74.2	20	87.1	13	78.6	12
15	VA11W-230	81.6	27	50.4	28	77.0	13	89.5	2	84.5	17	83.6	9
16	VA11W-106	88.3	14	59.4	11	72.6	19	80.3	9	89.7	9	70.1	27
17	TN1401	79.8	28	52.9	25	72.1	20	70.9	23	68.7	29	72.9	21
18	KWS026	95.4	2	63.5	4	67.8	29	78.7	12			87.7	5
19	KWS027	78.1	32	58.0	15	70.6	23	57.8	29	67.1	30	72.0	24
20	OK11754WF	85.2	20	54.5	21	76.5	14	49.4	32	49.7	31	76.6	13
21	TXE21	90.6	9	60.9	7	73.6	18	66.5	26	80.6	21	62.3	31
22	MDC07026-12-30	88.3	15	60.8	8			89.2	4			78.9	11
23	MD04W8-12-3	90.5	10	62.5	5	68.1	27	77.0	14	75.3	25	73.5	19
24	GA03564-12E6	96.6	1	68.6	1			91.5	1	100.9	1	91.0	2
25	GA071630-12LE9	95.2	3	65.1	3			89.5	3	94.2	6	85.2	7
26	GA04434-12LE28	92.3	6	49.7	29	68.5	25	76.9	15	95.1	4	75.8	17
27	GA04417-12E33	88.5	12	50.9	27	77.5	12	85.3	5	94.3	5	84.1	8
28	AR04002-3	89.1	11	58.1	14	68.4	26	55.0	31	85.3	15	76.0	16
29	AR04008-5	87.6	17	58.3	13	74.4	16	57.2	30	75.2	26	76.2	15
30	LA05145D-21	84.1	22	32.4	32	76.0	15	74.7	19	83.7	19	66.8	29
31	LA06027E-P7	78.6	30	32.1	33	71.9	22	80.2	10	78.4	23	73.2	20
32	08850-2	84.8	21	49.4	30	78.0	11	67.7	25	89.0	11	72.2	23
33	08577-4	87.7	16	56.2	19	73.8	17	44.2	33	95.7	3	89.8	3
LOCATION MEANS		86.7		55.7		76.6		73.7		83.8		75.8	
LSD (.05)		5.8		10.4		25.2		10				15.9	
CV %		3.3		15.7		12.8		6.5				12.9	
Reps		2		4				2				3	
Harvest Plot Area (sq.ft.)		70						60				42.5	

YIELD (bu/acre)

		Farmersville TX Sutton	ab rank	Blacksburg VA Griffey	ab rank	Warsaw VA Griffey	ab rank
1	AGS 2000	76.1	24	103.0	16	81.8	20
2	USG 3555	78.1	18	104.9	11	84.4	15
3	Jamestown	71.4	32	107.4	7	79.0	27
4	USG 3120	85.7	6	107.2	8	84.9	14
5	KWS013	73.9	29	110.6	4	87.2	9
6	LA03200E-2	87.4	5	100.5	20	83.7	16
7	LA05130D-P5	84.0	10	100.0	22	80.0	24
8	MD04W249-11-7	85.6	8	103.4	14	88.2	6
9	NC09-20768	84.5	9	98.0	24	83.4	17
10	NC09-20986	77.2	20	94.2	29	75.5	28
11	NC09-22402	73.3	30	101.6	19	91.0	1
12	NC8170-4-3	77.0	21	105.5	10	85.6	11
13	VA10W-96	74.3	27	102.8	17	86.8	10
14	VA11W-108	90.5	4	114.1	2	90.8	2
15	VA11W-230	81.5	13	99.0	23	88.6	5
16	VA11W-106	92.7	1	108.0	6	85.5	12
17	TN1401	79.9	15	106.4	9	81.5	21
18	KWS026	90.6	3	100.5	21	90.1	3
19	KWS027	76.5	23	90.1	31	82.1	19
20	OK11754WF	75.6	25	84.5	33	74.1	30
21	TXE21	74.0	28	103.7	13	82.2	18
22	MDC07026-12-30	79.5	16	102.2	18	85.3	13
23	MD04W8-12-3	77.5	19	104.9	12	74.9	29
24	GA03564-12E6	85.7	6	120.1	1	89.3	4
25	GA071630-12LE9	77.0	21	96.9	26	81.3	22
26	GA04434-12LE28	90.9	2	97.3	25	79.8	26
27	GA04417-12E33	81.0	14	110.9	3	80.5	23
28	AR04002-3	69.2	33	94.7	28	64.7	33
29	AR04008-5	72.4	31	92.1	30	79.9	25
30	LA05145D-21	81.6	12	103.2	15	74.0	31
31	LA06027E-P7	75.4	26	90.0	32	73.5	32
32	08850-2	82.5	11	108.3	5	87.8	8
33	08577-4	79.4	17	95.8	27	88.0	7
LOCATION MEANS		80.1		101.9		82.6	
LSD (.05)		8.6		6.7		5.4	
CV %		7.9		3.9		3.8	
Reps		3					
Harvest Plot Area (sq.ft.)		48.3					

YIELD (bu/acre)

		ENTRY MEANS ALL LOCATIONS	rank	ENTRY MEANS IN-REGION [a]	rank	ENTRY MEANS CV <10% [b]	rank
1	AGS 2000	70.6	28	73.3	22	78.7	29
2	USG 3555	75.2	17	73.0	23	80.3	23
3	Jamestown	72.1	27	73.8	20	80.9	21
4	USG 3120	77.4	9	79.3	7	84.4	11
5	KWS013	79.3	5	78.7	10	84.8	10
6	LA03200E-2	78.4	7	79.3	6	86.5	6
7	LA05130D-P5	74.0	22	76.0	17	82.0	19
8	MD04W249-11-7	76.2	12	77.8	12	82.0	18
9	NC09-20768	70.5	29	72.5	28	77.9	30
10	NC09-20986	78.2	8	78.3	11	83.2	15
11	NC09-22402	75.7	15	77.7	13	85.6	7
12	NC8170-4-3	72.4	26	74.3	19	82.5	17
13	VA10W-96	76.0	13	76.6	15	85.1	8
14	VA11W-108	83.9	2	83.7	2	91.9	1
15	VA11W-230	78.7	6	79.6	5	87.3	5
16	VA11W-106	82.8	4	81.0	4	89.9	4
17	TN1401	73.6	23	72.5	26	80.4	22
18	KWS026	83.0	3	81.2	3	90.2	3
19	KWS027	72.6	24	71.9	30	79.0	27
20	OK11754WF	70.2	32	67.4	33	74.7	33
21	TXE21	70.3	31	73.7	21	82.0	20
22	MDC07026-12-30	77.0	10	72.6	24	79.2	26
23	MD04W8-12-3	72.5	25	72.5	27	80.3	24
24	GA03564-12E6	84.1	1	85.0	1	90.3	2
25	GA071630-12LE9	74.7	19	77.0	14	83.0	16
26	GA04434-12LE28	75.7	14	79.1	8	85.0	9
27	GA04417-12E33	75.4	16	78.9	9	83.5	14
28	AR04002-3	74.7	20	72.6	25	75.7	32
29	AR04008-5	70.5	30	70.5	31	76.2	31
30	LA05145D-21	74.6	21	74.4	18	83.8	13
31	LA06027E-P7	68.2	33	68.4	32	79.3	25
32	08850-2	76.5	11	76.6	16	83.8	12
33	08577-4	74.9	18	72.3	29	78.9	28
LOCATION MEANS		75.5		75.8		82.7	
LSD (.05)							
CV %							
Reps							
Harvest Plot Area (sq.ft.)							

TEST WEIGHT (lbs/bu)

		Belle Mina AL Glass	Quincy FL Babar	Griffin GA Johnson	Plains GA Johnson	Champaign IL Murche
1	AGS 2000	57.1	51.9	57.1	56.3	33.0
2	USG 3555	56.0	48.9	57.6	52.7	
3	Jamestown	58.8	54.0	59.3	59.7	44.8
4	USG 3120	57.8	54.0	58.5	58.3	42.7
5	KWS013	54.9	47.7	56.4	57.9	43.7
6	LA03200E-2	57.7	56.5	60.5	60.6	45.1
7	LA05130D-P5	57.9	51.2	59.0	59.1	41.4
8	MD04W249-11-7	58.2	54.2	59.2	56.8	38.6
9	NC09-20768	57.9	50.5	58.4	60.1	22.3
10	NC09-20986	58.1	55.4	59.7	60.7	43.5
11	NC09-22402	55.8	50.1	58.1	59.1	35.8
12	NC8170-4-3	58.4	51.0	59.2	59.1	30.3
13	VA10W-96	57.5	51.7	58.7	59.6	35.0
14	VA11W-108	56.1	51.7	57.2	57.4	49.1
15	VA11W-230	57.4	52.6	58.7	60.9	50.6
16	VA11W-106	56.5	51.3	57.3	59.3	52.7
17	TN1401	56.0	49.9	56.7	56.3	52.8
18	KWS026	57.5	51.7	58.7	57.7	53.9
19	KWS027	57.4	51.8	59.7	58.0	45.8
20	OK11754WF	52.9	51.6	56.9	58.0	53.7
21	TXE21	53.8	49.6	56.7	57.4	30.9
22	MDC07026-12-30	58.2	51.1	54.4	54.9	53.2
23	MD04W8-12-3	57.7	49.1	58.5	60.0	49.8
24	GA03564-12E6	58.0	54.0	59.6	59.2	50.1
25	GA071630-12LE9	55.2	50.0	56.1	55.8	24.5
26	GA04434-12LE28	56.0	54.0	57.7	57.6	18.1
27	GA04417-12E33	56.3	52.2	59.5	57.9	41.4
28	AR04002-3	55.2	49.7	56.5	56.4	50.4
29	AR04008-5	56.6	48.9	57.0	58.0	36.7
30	LA05145D-21	57.8	53.1	59.5	60.0	52.6
31	LA06027E-P7	56.4	49.7	57.4	56.9	46.8
32	08850-2	56.9	52.7	58.8	60.2	48.0
33	08577-4	56.4	43.4	54.5	55.2	49.4
LOCATION MEANS		56.8	51.4	58.0	58.1	42.7

TEST WEIGHT (lbs/bu)

		Harrisburg IL Murche	Harrisburg IL Obert	Liberty IL Obert	Battle Ground IN Brown	Lafayette IN Obert
1	AGS 2000	48.7	43.9	53.4	54.2	57.5
2	USG 3555	50.0	47.8	53.3	56.4	56.2
3	Jamestown	52.5	52.3	55.2	60.5	58.6
4	USG 3120	61.2	48.8	54.0	58.3	59.4
5	KWS013	48.9	50.9	49.7	57.0	57.1
6	LA03200E-2	48.7	50.2	54.7	59.8	59.8
7	LA05130D-P5	47.9	48.9	50.3	59.6	59.9
8	MD04W249-11-7	53.2	53.0	53.7	61.1	58.8
9	NC09-20768		49.1	47.9	58.9	59.0
10	NC09-20986	53.9	52.3	56.0	60.8	59.9
11	NC09-22402	50.2	46.2	53.3	54.9	56.4
12	NC8170-4-3	53.4	51.2	55.9	57.7	58.5
13	VA10W-96	52.9	52.6	54.1	59.3	58.8
14	VA11W-108	50.4	50.6	54.0	58.3	57.7
15	VA11W-230	52.4	53.2	56.2	60.8	59.1
16	VA11W-106	49.9	50.7	53.4	58.0	57.1
17	TN1401	48.7	49.5	53.1	58.4	57.1
18	KWS026	53.4	51.8	55.5	59.6	58.7
19	KWS027	51.0	49.6	51.7	58.7	57.6
20	OK11754WF	47.9	48.2	52.6	59.6	57.8
21	TXE21		49.0	47.5	59.5	56.5
22	MDC07026-12-30	55.1	52.3	59.4	60.8	60.8
23	MD04W8-12-3	53.0	51.0	54.4	58.9	59.0
24	GA03564-12E6		49.0	52.2	56.3	59.0
25	GA071630-12LE9	48.1	49.0	46.0	56.4	57.8
26	GA04434-12LE28	46.5	48.4		56.6	58.7
27	GA04417-12E33		48.5	47.6	58.4	59.7
28	AR04002-3	50.6	48.8	53.8	57.7	57.6
29	AR04008-5	51.5	49.5	51.0	58.6	57.8
30	LA05145D-21	53.3	50.3	57.1	60.4	59.4
31	LA06027E-P7		49.0	53.2	58.3	56.9
32	08850-2	51.0	50.1	40.0	58.7	57.4
33	08577-4	49.7	46.4	51.0	57.7	57.5
LOCATION MEANS		51.2	49.8	52.5	58.5	58.3

TEST WEIGHT (lbs/bu)

		Lexington KY Van Sanford	Baton Rouge LA Harrison	Winnsboro LA Harrison	Brooksville MS Burgess	Queenstown MD Conway
1	AGS 2000	55.6	59.8	55.8	56.0	56.3
2	USG 3555	54.2	56.6	54.5	53.0	55.8
3	Jamestown	57.1	60.4	57.2	56.0	61.9
4	USG 3120	55.2	60.1	56.9	55.0	61.0
5	KWS013	53.9	56.5	54.2	52.0	56.7
6	LA03200E-2	57.7	59.2	56.6	55.0	61.4
7	LA05130D-P5	57.1	58.6	57.2	54.0	
8	MD04W249-11-7	57.4	59.7	57.1	54.0	61.3
9	NC09-20768	57.4	57.9	55.5	51.0	61.7
10	NC09-20986	58.1	58.8	57.8	50.0	62.5
11	NC09-22402	54.5	58.3	55.2	48.0	59.3
12	NC8170-4-3	58.8	58.6	58.3	52.0	61.4
13	VA10W-96	58.0	59.9	57.0	54.0	61.7
14	VA11W-108	55.3	58.0	55.8	49.0	59.2
15	VA11W-230	57.9	60.2	56.7	56.0	62.0
16	VA11W-106	55.1	58.1	56.0	53.0	58.2
17	TN1401	56.1	56.5	56.3	50.0	55.1
18	KWS026	58.4	58.3	58.0	54.0	57.8
19	KWS027	55.7	57.5	57.1	51.0	51.9
20	OK11754WF	56.5	55.2	50.4	51.0	58.9
21	TXE21	51.3	59.3	53.8	53.0	57.3
22	MDC07026-12-30	57.8	58.8	58.8	55.0	
23	MD04W8-12-3	59.3	58.4	57.8	55.0	63.0
24	GA03564-12E6	56.9	60.8	57.8	56.0	
25	GA071630-12LE9	53.9	56.6	56.3	52.0	
26	GA04434-12LE28	52.7	57.7	57.4	56.0	56.3
27	GA04417-12E33	57.1	59.2	56.7	56.0	59.4
28	AR04002-3	54.9	58.0	55.2	52.0	57.8
29	AR04008-5	56.2	58.2	56.6	54.0	60.4
30	LA05145D-21	58.3	59.2	57.4	54.0	61.6
31	LA06027E-P7	53.9	55.4	55.2	52.0	59.3
32	08850-2	58.6	57.5	56.8	53.0	59.7
33	08577-4	54.3	53.7	55.2	52.0	58.1
LOCATION MEANS		56.2	58.2	56.3	53.2	59.2

TEST WEIGHT (lbs/bu)

		Kinston NC Murphy	Raleigh NC Marshall	Knoxville TN West	Farmersville TX Sutton	Blacksburg VA Griffey
1	AGS 2000	60.2	60.2	58.8	57.4	61.1
2	USG 3555	58.3	59.4	56.5	56.9	59.5
3	Jamestown	61.7	60.7	59.1	59.0	61.7
4	USG 3120	60.9	61.3	58.6	58.9	61.8
5	KWS013	59.0	59.2	57.5	57.8	60.5
6	LA03200E-2	61.9	61.3	60.1	59.7	62.5
7	LA05130D-P5	61.1	60.3	58.6	59.1	62.1
8	MD04W249-11-7	60.8	62.5	59.2	58.8	62.2
9	NC09-20768	61.0	61.3	58.8	59.6	61.1
10	NC09-20986	62.3	61.9	59.6	59.3	61.7
11	NC09-22402	60.4	60.8	58.8	57.5	60.8
12	NC8170-4-3	61.2	62.3	59.1	59.6	61.5
13	VA10W-96	62.0	60.8	59.7	59.2	62.2
14	VA11W-108	58.8	60.1	57.5	57.8	60.0
15	VA11W-230	62.8	61.1	59.7	60.1	62.2
16	VA11W-106	60.0	60.2	57.3	57.8	59.9
17	TN1401	59.0	59.1	58.4	57.2	59.6
18	KWS026	60.6	60.6	59.7	58.6	60.5
19	KWS027	58.5	60.7	57.6	57.1	60.0
20	OK11754WF	58.0	60.8	58.1	58.8	61.1
21	TXE21	58.7	60.4	56.4	56.4	59.8
22	MDC07026-12-30	62.5	61.8	60.1	60.7	62.1
23	MD04W8-12-3	61.1	58.9	57.6	59.0	61.7
24	GA03564-12E6	61.8	62.6	59.9	59.2	62.0
25	GA071630-12LE9	58.4	59.8	57.7	55.3	58.8
26	GA04434-12LE28	60.5	61.0	57.2	57.9	60.6
27	GA04417-12E33	61.7	61.2	59.6	58.3	61.7
28	AR04002-3	56.2	59.2	56.6	56.9	58.9
29	AR04008-5	57.7	58.8	57.4	57.3	59.9
30	LA05145D-21	61.5	61.4	59.2	58.9	62.3
31	LA06027E-P7	59.6	58.6	58.5	57.8	60.5
32	08850-2	59.8	59.0	58.1	58.4	60.9
33	08577-4	54.8	60.4	57.0	57.8	60.1
LOCATION MEANS		60.1	60.5	58.4	58.3	60.9

TEST WEIGHT (lbs/bu)

		Warsaw VA Griffey	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	59.4	54.9	27
2	USG 3555	58.8	55.1	26
3	Jamestown	59.8	57.6	5
4	USG 3120	60.3	57.3	9
5	KWS013	57.7	54.7	29
6	LA03200E-2	59.8	57.6	7
7	LA05130D-P5	59.5	56.1	16
8	MD04W249-11-7	58.5	57.1	11
9	NC09-20768	58.9	55.4	22
10	NC09-20986	59.4	57.7	4
11	NC09-22402	58.4	54.8	28
12	NC8170-4-3	59.9	56.5	14
13	VA10W-96	60.6	56.9	12
14	VA11W-108	58.5	55.8	18
15	VA11W-230	60.3	58.1	1
16	VA11W-106	57.7	56.2	15
17	TN1401	57.3	55.4	23
18	KWS026	59.2	57.3	8
19	KWS027	58.4	55.6	20
20	OK11754WF	58.4	55.5	21
21	TXE21	57.9	54.3	32
22	MDC07026-12-30	60.7	57.9	2
23	MD04W8-12-3	59.0	57.2	10
24	GA03564-12E6	60.5	57.6	6
25	GA071630-12LE9	58.1	53.3	33
26	GA04434-12LE28	59.2	54.5	30
27	GA04417-12E33	60.1	56.6	13
28	AR04002-3	57.8	55.2	24
29	AR04008-5	57.9	55.2	25
30	LA05145D-21	58.9	57.9	3
31	LA06027E-P7	59.6	55.7	19
32	08850-2	58.4	55.9	17
33	08577-4	56.9	54.4	31
LOCATION MEANS		58.9	56.1	

HEADING DATE (Julian days)

		Belle Mina AL Glass	Quincy FL Babar	Griffin GA Johnson	Plains GA Johnson	Champaign IL Murche
1	AGS 2000	118	90	98	101	154.0
2	USG 3555	118	97	102	103	154.0
3	Jamestown	118	93	99	98	152.5
4	USG 3120	118	89	96	98	149.0
5	KWS013	118	95	99	102	146.5
6	LA03200E-2	120	93	98	102	150.0
7	LA05130D-P5	118	96	102	104	150.5
8	MD04W249-11-7	119	103	103	105	151.5
9	NC09-20768	119	103	103	107	155.5
10	NC09-20986	118	98	101	103	153.0
11	NC09-22402	120	97	103	103	154.0
12	NC8170-4-3	118	104	103	107	153.0
13	VA10W-96	118	98	99	104	150.0
14	VA11W-108	118	104	102	106	148.5
15	VA11W-230	118	95	102	104	150.0
16	VA11W-106	121	105	104	107	148.0
17	TN1401	118	99	101	105	146.5
18	KWS026	118	97	101	105	149.5
19	KWS027	123	108	108	113	151.5
20	OK11754WF	118	82	93	97	145.0
21	TXE21	120	101	103	104	155.5
22	MDC07026-12-30	118	101	102	105	145.0
23	MD04W8-12-3	118	96	110	105	149.5
24	GA03564-12E6	118	96	109	100	149.0
25	GA071630-12LE9	121	95	105	104	154.0
26	GA04434-12LE28	121	96	103	103	153.0
27	GA04417-12E33	118	96	101	100	151.0
28	AR04002-3	118	100	104	102	149.0
29	AR04008-5	118	96	105	105	150.5
30	LA05145D-21	118	95	102	103	148.5
31	LA06027E-P7	118	102	102	102	154.0
32	08850-2	118	98	104	105	148.0
33	08577-4	118	101	104	105	146.0
LOCATION MEANS		118.7	97.5	102.2	103.5	150.5

HEADING DATE (Julian days)

		Harrisburg IL Murche	Harrisburg IL Obert	Lafayette IN Obert	Lexington KY Van Sanford	Baton Rouge LA Harrison
1	AGS 2000	134.1	136	140.5	132.5	89.5
2	USG 3555	134.9	136	141.0	134.0	92.0
3	Jamestown	133.0	135	139.0	131.5	87.0
4	USG 3120	133.0	135	137.5	130.0	88.0
5	KWS013	131.3	138	139.5	129.5	92.0
6	LA03200E-2	135.3	138	142.0	133.0	90.0
7	LA05130D-P5	134.5	136	141.5	133.5	91.5
8	MD04W249-11-7	133.2	138	142.0	132.5	94.0
9	NC09-20768	136.1	136	141.5	134.0	93.0
10	NC09-20986	132.0	135	139.5	131.0	92.0
11	NC09-22402	136.3	139	142.0	134.0	92.0
12	NC8170-4-3	134.4	136	141.5	133.0	96.5
13	VA10W-96	130.6	135	138.0	128.5	92.0
14	VA11W-108	131.6	135	141.0	132.5	93.0
15	VA11W-230	132.0	135	140.5	131.5	90.5
16	VA11W-106	133.6	135	142.0	133.0	95.0
17	TN1401	132.7	136	140.0	130.5	95.5
18	KWS026	131.0	134	140.0	131.0	93.5
19	KWS027	136.5	136	144.5	135.0	98.0
20	OK11754WF	132.7	134	137.5	131.0	83.0
21	TXE21	136.0	141	142.5	133.0	92.0
22	MDC07026-12-30	132.2	135	140.0	130.5	94.5
23	MD04W8-12-3	130.8	136	139.5	128.5	94.0
24	GA03564-12E6	133.5	136	141.0	132.5	91.0
25	GA071630-12LE9	136.6	141	142.0	134.0	92.5
26	GA04434-12LE28	135.7	138	142.0	134.0	91.0
27	GA04417-12E33	133.8	137	140.0	133.0	91.5
28	AR04002-3	133.4	136	140.0	132.5	92.5
29	AR04008-5	134.2	136	141.0	133.5	92.0
30	LA05145D-21	133.4	135	141.5	132.0	90.5
31	LA06027E-P7	135.0	139	142.0	134.0	91.5
32	08850-2	133.2	136	142.0	132.5	93.0
33	08577-4	131.9	137	141.0	132.0	95.5
LOCATION MEANS		133.6	136.4	140.8	132.2	92.1

HEADING DATE (Julian days)

		Winnsboro LA Harrison	Queenstown MD Conway	Kinston NC Murphy	Raleigh NC Marshall	Knoxville TN West
1	AGS 2000	101.5	138.5	112	114	119
2	USG 3555	102.0	138.5	115	115	123
3	Jamestown	100.5	136.0	109	112	120
4	USG 3120	100.0	134.5	108	112	119
5	KWS013	101.0	134.0	112	114	118
6	LA03200E-2	101.5	139.0	114	115	122
7	LA05130D-P5	102.0	138.5	114	116	123
8	MD04W249-11-7	106.0	138.5	116	117	123
9	NC09-20768	105.5	138.5	116	118	125
10	NC09-20986	103.0	135.5	112	115	120
11	NC09-22402	105.0	140.0	115	118	122
12	NC8170-4-3	106.0	138.5	115	118	121
13	VA10W-96	103.0	132.5	112	115	120
14	VA11W-108	105.5	138.5	115	118	121
15	VA11W-230	102.0	137.0	114	116	119
16	VA11W-106	106.5	139.5	120	118	125
17	TN1401	104.0	138.0	115	118	120
18	KWS026	105.5	138.0	115	117	121
19	KWS027	108.0	140.0	120	122	127
20	OK11754WF	100.0	133.0	109	110	118
21	TXE21	104.0	138.5	114	117	126
22	MDC07026-12-30	104.5	138.5	116	118	121
23	MD04W8-12-3	103.0	134.0	115	115	120
24	GA03564-12E6	101.5	138.0	112	114	120
25	GA071630-12LE9	106.5	142.0	116	118	123
26	GA04434-12LE28	106.0	140.0	115	117	125
27	GA04417-12E33	101.5	137.0	110	115	122
28	AR04002-3	104.0	138.5	112	116	122
29	AR04008-5	104.0	138.0	114	117	123
30	LA05145D-21	102.0	138.5	115	115	123
31	LA06027E-P7	103.0	139.5	112	116	123
32	08850-2	105.5	138.5	115	117	122
33	08577-4	106.0	138.0	117	118	120
LOCATION MEANS		103.6	137.7	114.0	116.1	121.7

HEADING DATE (Julian days)

		Farmersville TX Sutton	Blacksburg VA Griffey	Warsaw VA Griffey	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	118	131.5	129.0	119.8	6
2	USG 3555	116	132.0	129.5	121.3	19
3	Jamestown	112	131.0	127.0	118.5	3
4	USG 3120	114	130.0	126.0	117.6	2
5	KWS013	111	131.0	127.0	118.8	4
6	LA03200E-2	116	131.5	127.0	120.4	12
7	LA05130D-P5	116	133.0	128.0	121.0	18
8	MD04W249-11-7	117	132.5	129.0	122.2	25
9	NC09-20768	115	133.0	130.0	122.7	30
10	NC09-20986	114	131.5	128.5	120.1	9
11	NC09-22402	118	133.0	129.5	122.3	27
12	NC8170-4-3	115	133.0	127.5	122.2	26
13	VA10W-96	112	131.0	127.0	119.2	5
14	VA11W-108	114	133.0	129.0	121.4	20
15	VA11W-230	114	131.0	127.0	119.9	7
16	VA11W-106	115	133.5	128.5	122.8	31
17	TN1401	115	132.0	129.0	120.8	15
18	KWS026	115	132.0	129.0	120.7	14
19	KWS027	120	135.5	133.0	125.5	33
20	OK11754WF	114	130.5	124.0	116.2	1
21	TXE21	115	133.0	129.0	122.5	29
22	MDC07026-12-30	114	132.0	129.0	120.9	16
23	MD04W8-12-3	113	132.0	127.5	120.4	11
24	GA03564-12E6	113	132.0	128.0	120.3	10
25	GA071630-12LE9	122	133.0	129.5	123.1	32
26	GA04434-12LE28	118	132.5	131.0	122.3	28
27	GA04417-12E33	115	132.0	128.0	120.1	8
28	AR04002-3	116	133.0	128.5	121.0	17
29	AR04008-5	118	132.0	128.5	121.4	21
30	LA05145D-21	118	133.0	129.0	120.7	13
31	LA06027E-P7	118	132.5	129.5	121.8	24
32	08850-2	116	133.0	130.0	121.5	22
33	08577-4	115	133.0	129.5	121.6	23
LOCATION MEANS		115.5	132.3	128.5	120.9	

HEIGHT (inches)

		Belle Mina AL Glass	Quincy FL Babar	Griffin GA Johnson	Plains GA Johnson	Champaign IL Murche
1	AGS 2000	35	45	36	37	27
2	USG 3555	29	39	33	32	22
3	Jamestown	32	39	35	33	22
4	USG 3120	34	38	37	35	27
5	KWS013	34	38	35	35	26
6	LA03200E-2	34	39	36	36	25
7	LA05130D-P5	33	39	36	36	26
8	MD04W249-11-7	33	43	37	39	26
9	NC09-20768	30	38	34	39	20
10	NC09-20986	35	40	35	39	20
11	NC09-22402	33	43	35	38	23
12	NC8170-4-3	34	49	37	39	25
13	VA10W-96	34	41	36	40	24
14	VA11W-108	34	41	34	38	27
15	VA11W-230	32	39	32	36	22
16	VA11W-106	31	40	33	36	28
17	TN1401	31	38	33	33	25
18	KWS026	33	43	34	37	25
19	KWS027	39	41	37	39	31
20	OK11754WF	32	38	34	35	28
21	TXE21	32	42	33	36	21
22	MDC07026-12-30	31	38	34	36	26
23	MD04W8-12-3	34	33	35	40	24
24	GA03564-12E6	35	37	37	35	24
25	GA071630-12LE9	34	39	36	38	25
26	GA04434-12LE28	33	41	35	37	22
27	GA04417-12E33	36	46	36	38	24
28	AR04002-3	34	42	36	37	28
29	AR04008-5	34	48	37	38	25
30	LA05145D-21	37	42	38	39	29
31	LA06027E-P7	32	39	34	34	25
32	08850-2	32	42	35	35	28
33	08577-4	35	41	37	38	28
LOCATION MEANS		33.4	40.6	35.2	36.8	25.1

HEIGHT (inches)

		Harrisburg IL Murche	Battle Ground IN Brown	Lafayette IN Obert	Lexington KY Van Sanford	Brooksville MS Burgess
1	AGS 2000	33.2	35	33.5	38.0	40
2	USG 3555	28.4	33	29.9	26.8	37
3	Jamestown	29.5	33	31.9	31.5	39
4	USG 3120	31.8	33	33.5	31.3	42
5	KWS013	32.2	33	34.6	34.1	40
6	LA03200E-2	30.6	33	31.5	32.0	41
7	LA05130D-P5	32.0	32	32.3	32.9	41
8	MD04W249-11-7	32.2	34	34.3	30.2	36
9	NC09-20768	29.4	33	31.5	31.7	38
10	NC09-20986	31.0	33	30.7	29.6	36
11	NC09-22402	31.2	34	30.9	34.5	36
12	NC8170-4-3	32.5	35	36.6	36.3	43
13	VA10W-96	30.3	31	34.3	33.3	39
14	VA11W-108	33.7	33	33.5	34.0	34
15	VA11W-230	31.4	33	29.9	31.4	34
16	VA11W-106	31.4	33	31.5	33.9	33
17	TN1401	30.6	31	31.7	28.9	38
18	KWS026	32.2	33	30.1	34.8	38
19	KWS027	34.2	36	33.5	35.1	36
20	OK11754WF	30.5	33	32.3	32.1	34
21	TXE21	28.4	29	30.1	30.3	37
22	MDC07026-12-30	31.6	32	33.1	33.3	41
23	MD04W8-12-3	31.3	32	33.7	34.0	42
24	GA03564-12E6	30.7	31	31.5	34.5	37
25	GA071630-12LE9	32.9	33	33.9	35.1	37
26	GA04434-12LE28	29.5	32	30.9	34.1	37
27	GA04417-12E33	31.4	33	35.4	35.1	37
28	AR04002-3	32.5	34	33.5	36.6	40
29	AR04008-5	34.0	36	38.4	37.5	37
30	LA05145D-21	36.1	38	37.4	33.8	38
31	LA06027E-P7	30.2	31	32.5	29.2	32
32	08850-2	30.9	33	29.3	33.5	32
33	08577-4	32.6	34	32.1	35.2	37
LOCATION MEANS		31.5	33.1	32.7	33.2	37.5

HEIGHT (inches)

		Queenstown MD Conway	Kinston NC Murphy	Raleigh NC Marshall	Knoxville TN West	Blacksburg VA Griffey
1	AGS 2000	35.6	40.6	38	34.0	33.0
2	USG 3555	28.3	33.1	33	29.0	29.5
3	Jamestown	28.9	36.6	33	29.5	31.0
4	USG 3120	33.9	39.0	37	33.5	31.5
5	KWS013	34.1	37.4	37	32.0	32.5
6	LA03200E-2	30.5	34.6	38	32.5	31.5
7	LA05130D-P5	29.3	37.4	39	33.5	31.0
8	MD04W249-11-7	31.5	44.9	43	32.5	34.0
9	NC09-20768	27.6	37.4	40	30.5	31.5
10	NC09-20986	33.1	42.5	40	32.5	32.0
11	NC09-22402	31.7	40.2	38	33.0	30.5
12	NC8170-4-3	34.1	42.9	40	34.0	34.0
13	VA10W-96	33.9	39.0	38	31.5	32.5
14	VA11W-108	30.7	39.4	38	33.0	33.0
15	VA11W-230	29.1	33.5	36	33.0	31.5
16	VA11W-106	30.9	35.8	36	30.0	32.0
17	TN1401	28.3	36.6	39	32.0	33.0
18	KWS026	30.3	41.7	36	33.0	34.0
19	KWS027	31.3	36.6	37	35.5	36.5
20	OK11754WF	30.1	35.4	30	32.5	31.5
21	TXE21	28.1	37.4	35	29.5	32.0
22	MDC07026-12-30	30.9	39.8	37	32.5	32.0
23	MD04W8-12-3	30.3	37.4	36	33.0	33.5
24	GA03564-12E6	29.3	37.0	36	31.5	31.5
25	GA071630-12LE9	32.7	39.0	38	34.0	31.5
26	GA04434-12LE28	28.7	35.4	35	31.5	30.0
27	GA04417-12E33	29.5	39.4	37	32.5	32.5
28	AR04002-3	30.5	37.4	39	33.5	32.5
29	AR04008-5	34.6	41.3	38	35.5	35.0
30	LA05145D-21	33.1	39.4	41	34.5	36.0
31	LA06027E-P7	29.5	34.3	30	30.5	29.5
32	08850-2	29.9	34.3	36	31.0	33.0
33	08577-4	32.3	38.6	39	33.0	34.0
LOCATION MEANS		31.0	38.0	37.1	32.4	32.4

HEIGHT (inches)

		Warsaw VA Griffey	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	33.5	35.9	5
2	USG 3555	31.0	30.9	33
3	Jamestown	32.5	32.3	29
4	USG 3120	33.5	34.4	12
5	KWS013	34.0	34.3	13
6	LA03200E-2	32.5	33.6	21
7	LA05130D-P5	33.0	34.0	17
8	MD04W249-11-7	33.5	35.3	6
9	NC09-20768	31.0	32.7	26
10	NC09-20986	32.0	33.8	19
11	NC09-22402	31.5	34.0	16
12	NC8170-4-3	32.5	36.6	3
13	VA10W-96	34.0	34.5	10
14	VA11W-108	32.5	34.3	14
15	VA11W-230	32.0	32.2	30
16	VA11W-106	32.0	33.0	23
17	TN1401	31.0	32.5	27
18	KWS026	32.5	34.2	15
19	KWS027	37.0	36.0	4
20	OK11754WF	31.5	32.5	28
21	TXE21	30.0	31.9	31
22	MDC07026-12-30	33.0	33.8	20
23	MD04W8-12-3	34.0	33.9	18
24	GA03564-12E6	32.5	33.2	22
25	GA071630-12LE9	32.5	34.5	11
26	GA04434-12LE28	31.5	32.7	25
27	GA04417-12E33	33.5	34.8	9
28	AR04002-3	30.0	34.8	8
29	AR04008-5	36.5	36.6	2
30	LA05145D-21	34.5	36.7	1
31	LA06027E-P7	31.0	31.5	32
32	08850-2	31.0	32.9	24
33	08577-4	32.5	34.9	7
LOCATION MEANS		32.6		

LODGING

		Belle Mina AL Glass 0-9	Quincy FL Babar 0-9	Griffin GA Johnson 0-9	Baton Rouge LA Harrison 0-9	Brooksville MS Burgess 0-9
1	AGS 2000	0	3	1	3.0	1
2	USG 3555	0	3	0	3.0	1
3	Jamestown	0	7	1	0.5	1
4	USG 3120	1	8	1	3.0	1
5	KWS013	0	8	3	4.0	1
6	LA03200E-2	0	8	0	2.0	1
7	LA05130D-P5	1	7	3	1.5	1
8	MD04W249-11-7	1	3	1	3.5	1
9	NC09-20768	1	8	2	4.0	1
10	NC09-20986	0	8	2	2.5	1
11	NC09-22402	0	8	2	2.0	1
12	NC8170-4-3	2	9	3	4.5	1
13	VA10W-96	1	7	1	1.5	1
14	VA11W-108	0	8	0	2.5	1
15	VA11W-230	0	8	0	2.5	1
16	VA11W-106	1	7	0	4.0	1
17	TN1401	1	8	1	3.0	1
18	KWS026	1	8	0	4.0	1
19	KWS027	0	8	0	1.0	1
20	OK11754WF	0	8	1	2.5	1
21	TXE21	0	2	0	2.5	1
22	MDC07026-12-30	2	9	6	4.0	1
23	MD04W8-12-3	0	2	3	3.5	1
24	GA03564-12E6	0	9	3	3.0	1
25	GA071630-12LE9	0	9	1	1.5	1
26	GA04434-12LE28	0	7	3	2.5	1
27	GA04417-12E33	0	5	3	3.0	1
28	AR04002-3	1	7	2	3.0	1
29	AR04008-5	1	7	3	5.0	3
30	LA05145D-21	0	7	3	3.0	1
31	LA06027E-P7	0	3	0	3.0	1
32	08850-2	1	1	0	3.5	1
33	08577-4	1	5	0	3.0	1
LOCATION MEANS		0.5	6.5	1.5	2.9	1.1

LODGING

		Raleigh NC Marshall	Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9
1	AGS 2000	1	1.5	1.0
2	USG 3555	1	2.0	1.0
3	Jamestown	1	2.0	0.5
4	USG 3120	1	1.5	1.0
5	KWS013	1	2.0	1.5
6	LA03200E-2	1	2.0	0.0
7	LA05130D-P5	1	1.0	0.0
8	MD04W249-11-7	4	2.0	0.5
9	NC09-20768	2	1.0	1.0
10	NC09-20986	1	2.5	0.5
11	NC09-22402	1	2.0	1.0
12	NC8170-4-3	2	6.5	2.0
13	VA10W-96	1	1.5	0.0
14	VA11W-108	1	1.5	0.5
15	VA11W-230	1	1.0	0.0
16	VA11W-106	1	2.5	0.5
17	TN1401	3	1.5	1.0
18	KWS026	2	5.0	1.0
19	KWS027	1	1.0	0.0
20	OK11754WF	1	2.0	1.0
21	TXE21	1	2.0	1.0
22	MDC07026-12-30	2	3.0	1.0
23	MD04W8-12-3	2	2.0	1.0
24	GA03564-12E6	1	1.5	0.0
25	GA071630-12LE9	1	1.0	0.0
26	GA04434-12LE28	1	1.5	0.5
27	GA04417-12E33	1	1.5	1.0
28	AR04002-3	1	2.0	0.5
29	AR04008-5	2	2.5	1.0
30	LA05145D-21	1	1.5	1.0
31	LA06027E-P7	0	1.0	1.0
32	08850-2	1	1.0	0.5
33	08577-4	1	1.5	1.0
LOCATION MEANS		1.3	1.9	0.7

WINTER DAMAGE

		Champaign IL Murche winter kill 0-9	Harrisburg IL Murche winter kill 0-9	Battle Ground IN Brown winter kill 0-9	Laurel Springs NC Marshall winter stress 0-9
1	AGS 2000	9.0	6.1	4.3	9
2	USG 3555	8.0	5.4	3.8	8
3	Jamestown	8.0	5.7	2.5	8
4	USG 3120	7.5	5.8	4.3	8
5	KWS013	6.5	3.8	1.0	8
6	LA03200E-2	6.0	4.8	2.8	8
7	LA05130D-P5	6.0	6.0	3.0	8
8	MD04W249-11-7	7.5	5.4	3.0	8
9	NC09-20768	9.0	6.7	3.5	8
10	NC09-20986	8.5	5.0	2.5	7
11	NC09-22402	8.5	6.4	2.5	7
12	NC8170-4-3	8.5	5.9	2.0	7
13	VA10W-96	7.0	6.2	2.0	8
14	VA11W-108	5.5	4.0	2.5	6
15	VA11W-230	7.0	4.6	3.3	8
16	VA11W-106	3.5	4.0	1.3	4
17	TN1401	3.0	4.1	1.0	5
18	KWS026	5.5	3.3	1.8	5
19	KWS027	3.5	3.7	1.5	5
20	OK11754WF	2.5	5.0	3.0	6
21	TXE21	8.5	5.9	3.8	8
22	MDC07026-12-30	3.5	4.8	2.0	5
23	MD04W8-12-3	7.0	4.3	2.8	6
24	GA03564-12E6	4.5	6.0	4.3	7
25	GA071630-12LE9	9.0	5.9	4.0	8
26	GA04434-12LE28	8.5	5.6	3.5	8
27	GA04417-12E33	7.5	6.4	4.5	6
28	AR04002-3	5.0	5.1	2.8	6
29	AR04008-5	8.0	5.6	3.3	6
30	LA05145D-21	5.0	4.0	1.8	7
31	LA06027E-P7	7.0	4.9	1.8	5
32	08850-2	4.0	3.8	2.0	5
33	08577-4	3.0	3.9	2.0	6
LOCATION MEANS		6.4	5.1	2.7	6.8

LEAF RUST

		Plains GA Johnson 0-9	Champaign IL Murche 0-9	Battle Ground IN Brown 0-9	Baton Rouge LA Harrison 0-9	Kinston NC Murphy 0-9
1	AGS 2000	0	1.0	0	0.7	2.0
2	USG 3555	8	3.5	1	1.3	6.0
3	Jamestown	7	1.0	0	1.0	6.0
4	USG 3120	0	1.0	0	0.7	1.5
5	KWS013	8	1.5	0	1.7	3.0
6	LA03200E-2	8	4.0	0	3.3	5.5
7	LA05130D-P5	7	5.0	1	3.7	4.5
8	MD04W249-11-7	9	4.0	3	4.0	5.5
9	NC09-20768	0	1.5	0	0.0	0.0
10	NC09-20986	3	2.5	8	1.3	5.0
11	NC09-22402	3	1.0	1	0.3	0.0
12	NC8170-4-3	7	1.5	0	0.3	6.5
13	VA10W-96	1	3.0	0	0.0	1.0
14	VA11W-108	7	2.5	0	0.7	7.0
15	VA11W-230	0	1.0	0	0.0	1.0
16	VA11W-106	7	2.5	0	1.3	4.0
17	TN1401	0	1.0	0	0.0	0.0
18	KWS026	7	4.5	0	3.0	5.0
19	KWS027	9	6.0	0	4.3	6.5
20	OK11754WF	0	4.0	0	4.0	0.0
21	TXE21	0	1.0	0	0.0	0.0
22	MDC07026-12-30		1.0	0	0.3	0.0
23	MD04W8-12-3	8	7.0	0	0.7	6.0
24	GA03564-12E6	0	3.5	0	0.0	0.5
25	GA071630-12LE9	0	1.0	0	0.0	0.0
26	GA04434-12LE28	0	1.0	0	0.0	0.0
27	GA04417-12E33	1	4.5	0	0.0	0.5
28	AR04002-3	0	1.0	0	0.0	0.0
29	AR04008-5	3	3.0	0	0.0	0.0
30	LA05145D-21	6	1.0	0	2.0	5.0
31	LA06027E-P7	0	1.0	0	0.0	0.0
32	08850-2	2	5.0	2	4.0	0.0
33	08577-4	9	5.5	6.5	6.5	8.0
LOCATION MEANS		3.8	2.7	0.7	1.4	2.7
GROWTH STAGE / DATE				10.7		

LEAF RUST

		Farmersville TX Sutton 0-9	Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9
1	AGS 2000	3	1.5	0.0
2	USG 3555	0	5.5	1.5
3	Jamestown	0	1.0	2.0
4	USG 3120	0	1.5	0.0
5	KWS013	0	2.5	3.0
6	LA03200E-2	0	7.5	0.5
7	LA05130D-P5	0	6.0	0.0
8	MD04W249-11-7	3	3.5	3.0
9	NC09-20768	6	1.0	0.0
10	NC09-20986	0	5.5	0.5
11	NC09-22402	0	1.0	0.0
12	NC8170-4-3	1	6.5	0.5
13	VA10W-96	0	1.0	0.0
14	VA11W-108	0	2.5	0.0
15	VA11W-230	0	1.0	0.0
16	VA11W-106	0	1.0	0.0
17	TN1401	8	1.0	0.0
18	KWS026	3	6.5	2.0
19	KWS027	0	8.0	3.5
20	OK11754WF	0	1.0	0.0
21	TXE21	0	1.0	0.5
22	MDC07026-12-30	9	6.5	0.0
23	MD04W8-12-3	3	2.5	1.0
24	GA03564-12E6	0	1.0	0.0
25	GA071630-12LE9	0	1.0	0.0
26	GA04434-12LE28	0	1.0	0.0
27	GA04417-12E33	0	1.0	0.0
28	AR04002-3	0	2.0	0.0
29	AR04008-5	0	1.0	0.5
30	LA05145D-21	0	4.0	1.5
31	LA06027E-P7	0	1.5	0.0
32	08850-2	0	6.5	3.0
33	08577-4	8	7.5	5.0
LOCATION MEANS		1.3	3.1	0.8
GROWTH STAGE / DATE				

LEAF RUST (SEEDLING)

St. Paul MN
Kolmer

		Lr gene(s)	TNBGJ 11 US 238-2	MCTNB 11 US 185-1	MFPSB 06 MN 268	TBBGJ 11 US 124-3	KFBJG 97 CAN 64-1	MBDSD 11 US 129-2	TFBJQ 10 US 3-1	MHDSB 03 OH 237	TCRKG 07 OK 121A	PBLQG 91 MI 432
1	AGS 2000	Lr10, Lr26, +	;	;	3+;	;	3+	;	32+;	;	;23	;1-
2	USG 3555	Lr11, Lr26	;	3+	;2/3	;	;2	;	;1-	;2	32+;	;
3*	Jamestown	treated seed	0;	0;	0;	0;	0;	0;	0;	;	0	0
4*	USG 3120	treated seed	0;	0;	0;	0;	0;	0	0	0	0	0
5	KWS013	Lr26	;	3+	;22+	;1	;22+	;2 / 3+	3 / ;	3+	3+	;3+ (X)
6	LA03200E-2	Lr26	;2	3+	3+	;	32+	;	32	3+	12+	;12-
7	LA05130D-P5	Lr14a	;	3+	3+	;23	3+	3+	3+	3+	3+2+	3+
8	MD04W249-11-7	Lr11, Lr26	;	3+	;2	;	;22+	;	;	;22+	3+2+	;
9	NC09-20768	?	32+	32+	;123	---	;12	32+	32+	32+	23;	23-
10	NC09-20986	Lr1, Lr14a	;2-	3+	12	;	;	3+	3+	23	32+;	;
11	NC09-22402	Lr26, +	;2-	32+	;3	;12-	3	;2-	;12-	;12	;12	;12-
12	NC8170-4-3	Lr18	;1-	;1	;1-	;	;12	;2	;	;1	3+	; 3 (X)
13	VA10W-96	---	;	;1	;12-	;	;12-	;2	;2	;1	;123	;
14	VA11W-108	Lr18	;	;12-	;	;	;1-	;	;	;	3	;
15	VA11W-230	---	;	;12-	;	;	0	;1-	;1-	;1-	;12-	;
16	VA11W-106	Lr18	;	;12-	;12-	;	;	;2=	;2-	;1-	32+	;
17	TN1401	?	; 3f	0;	0; ?	;	;	0;	3+	0;	3+	;1-
18	KWS026	Lr14a	;3/3+	3+	32;	;23	3+	3	32+	3+	3+	;3 (X)
19	KWS027	?	;	3+	12 3 mix	;	0;	32+;	;123	;22+	3+	2+3;
20	OK11754WF	Lr39/41	3+	0;	0	; 3	0;	3+	0;	0;	0;	;
21	TXE21	---	;	12	;	;	;	;	0;	;	;	;
22	MDC07026-12-3	+	;	0;	;12+	;	;22+	;	32;	;	;	;
23	MD04W8-12-3	Lr26	;	3+	3+	; 3+	3+	;	;123	3+	3+	;1-
24	GA03564-12E6	?	;	12+	;	;	;2-	;2-	;12	;	;12	;
25	GA071630-12LE	?	3+	;	;12=	;12	3+	3+	3+	;	;12	;12-
26	GA04434-12LE2	+	;	0;	;12-	;	;22+	;	3+ / ;	0;	;12	;
27	GA04417-12E33	L2a, Lr24	3+;	0;	0;	;	3+	;	3+	0;	;12	;
28	AR04002-3	?	23+	2+3	22+	; 3	23	;	;23	;	;12	;
29	AR04008-5	?	2+3+	23	22+	3+;	;12-	;1-	;1	32+	;23	;1-
30	LA05145D-21	Lr1, +	3+	3+	32+	3+;	0;	;	3+	3+	3+	3+
31	LA06027E-P7	?	;	;	;12-	; 3	32+	3;	;22+	;1-	3+2+;	;2
32	08850-2	Lr24	; 3	; / 3	32+;	;23	3+	; / 3	3+	;	3+ / ;	;1-
33	08577-4	?	;2	3+	32+;	; 3	; 2	;2	3+	;2	3+	3+

--- = no Lr seedling genes
? = unable to postulate gene
+ = additional seedling resistance

Isolate	Virulence
TNBGJ	1,2a,2c,3,9,24,10,28,39/41
MCTNB	1,3,26,3ka,11,17,30,B,14a
MFPSB	1,3,24,26,3ka,17,30,B,10,14a
TBBGJ	1,2a,2c,3,10,28,39/41
KFBJG	2a,2c,3,24,26,10,14a,28
MBDSD	1,3,17,B,10,14a,39/41
TFBJQ	1,2a,2c,3,24,26,10,14a,21,28
MHDSB	1,3,16,26,17,B,10,14a
TCRKG	1,2a,2c,3,26,3ka,11,30,10,14a,18,28
PBLQG	1,2c,3,3ka,B,10,28

LEAF RUST (SEEDLING)

		Blacksburg VA Griffey	
		VT-LR TCRK+ MFQS	VT-LR TNRJ
		0-3	0-3
1	AGS 2000	23;	;1-
2	USG 3555	3	0;
3	Jamestown	23;	23;
4	USG 3120	23-;	0;Tr3
5	KWS013	3	3
6	LA03200E-2	23	;1-
7	LA05130D-P5	3	3
8	MD04W249-11-7	23	;1-
9	NC09-20768	1;	12;
10	NC09-20986	23;	23;
11	NC09-22402	1;	1;
12	NC8170-4-3	23;	1;
13	VA10W-96	12-;	;1
14	VA11W-108	23-;	12;
15	VA11W-230	;1-	;1
16	VA11W-106	2;	1;
17	TN1401	0;Tr3	3/0;
18	KWS026	3	3
19	KWS027	3;	3;
20	OK11754WF	0;	;1
21	TXE21	;1=	;1
22	MDC07026-12-30	23	23;
23	MD04W8-12-3	3-	0;
24	GA03564-12E6	12;	1;
25	GA071630-12LE9	1;	;1-
26	GA04434-12LE28	0;	1;
27	GA04417-12E33	0;	1;
28	AR04002-3	;1-	12-;
29	AR04008-5	0;	;1-Tr3
30	LA05145D-21	3	0;/3
31	LA06027E-P7	21;	1;
32	08850-2	3	3
33	08577-4	3-	3/1;

TNRJJ Vir: Lr1, 2a, 2c, 3, 3ka, 9, 10, 11, 14a, 24, 30
TCRKG Vir: Lr1, 2a, 2c, 3, 3ka, 10, 11, 14a, 18, 26, 30
MFQS Vir: Lr1, 3, 3ka, 10, 11, 14a, 24, 26, B

STEM RUST

		Baton Rouge LA Harrison 0-9
1	AGS 2000	0
2	USG 3555	0
3	Jamestown	2
4	USG 3120	0
5	KWS013	9
6	LA03200E-2	0
7	LA05130D-P5	0
8	MD04W249-11-7	0
9	NC09-20768	0
10	NC09-20986	4
11	NC09-22402	0
12	NC8170-4-3	6
13	VA10W-96	0
14	VA11W-108	0
15	VA11W-230	3
16	VA11W-106	0
17	TN1401	0
18	KWS026	0
19	KWS027	0
20	OK11754WF	1
21	TXE21	0
22	MDC07026-12-30	0
23	MD04W8-12-3	0
24	GA03564-12E6	0
25	GA071630-12LE9	0
26	GA04434-12LE28	0
27	GA04417-12E33	0
28	AR04002-3	4
29	AR04008-5	9
30	LA05145D-21	0
31	LA06027E-P7	0
32	08850-2	0
33	08577-4	9
LOCATION MEANS		1.4

STEM RUST

			St. Paul, MN Yue Jin																				
13/14	CDL			06ND76C	75ND717C	59KS19	77ND82A	99KS76A-1	74MN1409	1MN84A-1-	12WA147-2	75WA165-2A	04KEN156/0	04KEN156/0	06KEN19V3	07KEN24-4	06YEM34-1	10PAK05-1	13ETH18-1	Gene postulat	Field note buckthorn	field note X13 field	Field notes
repe	13/14	Nursery	Line	QFCSC	QTHJC	MCCFC	RCRSC	RKQQC	TPMKC	TTTTF	GFMNC	QCCSM	TTKSK rep1	TTKSK rep2	TTKST	TTTSK	TRTTF	RRTTF	TKTTF	NOTES			
74	126	Local c	McNair 701	4	4	4	4	4	4	4	4	4	4	3+	3+	3+	3+	3+	3+		100S	100S	
75	127	Local c	Red Chief	2+/2+3	4	4	4	2+3	4	4	2+3	4	3	2+3	2+3	2+3	3+	3+	3		80S	90S	
76	128	USSR 1	AGS 2000	2-	2	2-	2-	2-/1	2-	2-	2-	2-	2+3	3	3+/2+	2+3	2-	2	2-/3		10MR	20MR	
77	129	USSR 2	USG 3555	0;	0;	0	2=	2-	2-	2-	2-	0;	0	0;	0;	3+	2-;	2	2-		0	0	
78	130	USSR 3	Jamestown	0	0	0	0	0	0	0	0	0	0	0	0/3+	0	0/3+	;/3	-		60MS-S	90S	
79	131	USSR 4	USG 3120	2-	2-	2-	2-	2-	2-	2-	2-	2-	0	0/2	2+	2+	;2-	0	-		10MR	20MR	
	132	USSR 5	KWS013	4	4	4	4	4	4	4	4	4	4								80S	80S	
	133	USSR 6	LA03200E-2	2	2	2-	2	2	2	2-	2	2	4								10MR	20MR	
	134	USSR 7	LA05130D-P5	4/13;	4/;13	31;	4	31;/;1	4/31;	4	4	4	3								30MS-S	10MR-MS	
	135	USSR 8	MD04W249-11-7	2	2	2-	2-	2-	2	2-	2-	2	3+								5R/40S	30MR	low FHB
80	136	USSR 9	NC09-20768	0;	0;	0;	4	3	31;	4	4	0;	;	0;	0	3+	3	3	3+	Sr36	20S	30S	
	137	USSR 1	NC09-20986	31;/1-;	31;	31;	3	31;/;1-	4	4	4	31;	3+								50S	40S	
81	138	USSR 1	NC09-22402	0;	0;	0;	2/4	2-/3	31;/;1-	2/4	2/4	0;	0	0	0	2+/3	3	2/3	-	Sr36+	10MR	10MS	
82	139	USSR 1	NC8170-4-3	-	4	4	4	4	31;	4	4	4	3/2	3+ LIF	3+	3+	3	3+	3+		70S	80S	
	140	USSR 1	VA10W-96	4	;1/31;	31;	4	31;	4	-	4	31;	3+								50S	30MS	
	141	USSR 1	VA11W-108	4	4	4/31;	4	4	4	4	4	4	3+								80S	80S	
	142	USSR 1	VA11W-230	31;/4	31;	4/31;	4	31;	4	4	31;/4	31;	4								10S	10MR	low FHB
	143	USSR 1	VA11W-106	4	4	4	4	31	4	4	4	4	4								70S	70S	
83	144	USSR 1	TN1401	;1/4	4	-	4/2	4	4	4	4	4/1;	0/4/;	0/3	;1/31	3+	3+	3+	3+		50MS-S	60MS-S	
	145	USSR 1	KWS026	4	4	4	4	4	4	4	4	4	3								80S	70S	
	146	USSR 1	KWS027	23	4	2	4	3+	2	4	2	2	3+								70S	80S	
	147	USSR 2	OK11754WF	31;	;	;	;	13;	31;	4	31;	;1-	3								50MS	20S	
84	148	USSR 2	TXE21	;13	;	;	31;	;1/31;	13;	4	31;/;13	;1	3LIF	3	3+	3+	3+	3+	3+		TMS	0	
85	149	USSR 2	MDC07026-12-30	2	2-	2-	2-;	2-	2	2-;	2-	2	0	3 LIF	3+	3+	2	2	2-		10MR	20MR	low FHB
86	150	USSR 2	MD04W8-12-3	2	2	2-	2	2	-	2	2	4	2-	;2-	2+3	2-	2	2	2-	Sr24	20MR	10MR	low FHB
87	151	USSR 2	GA03564-12E6	;	0;	0;	0;	0;	0;	;1-	;	;	0	2 LIF	2	2-	2+	2	3	1A.1R?	0	0	
88	152	USSR 2	GA071630-12LE9	;1	0;	0;	;1	;1	0;	3/;	;	;1	0/2+	2+3	2+3	2+3	3+	3+	3		TMS	0/TS	
	153	USSR 2	GA04434-12LE28	;1/1;	4	;	31;/13;	;1	-	4	;2-	;2-	3								TMS	TS	
89	154	USSR 2	GA04417-12E33	2;	0;/4	;	3	;1	1;/;1	4	;/;2-	2-;/;	3LIF	3+	3+	3+	3+	3+	3+		5S	TS	PBC
90	155	USSR 2	AR04002-3	2;	2;	2=	2=/31;	2	2	2	2-	12	1	;1	0/3+	3-/;1	3+/2-	2/3	3+/2-		50S	20MR	
	156	USSR 2	AR04008-5	4	4	4	4	1;	4	4	4	4	3								80S	80S	
	157	USSR 3	LA05145D-21	4/23	4/2	4	4/2-	2/4	4/2	2-/4	4/2	4/2-	3								60S	70S	
	158	USSR 3	LA06027E-P7	31;	;1	;	;1	13-;	31;	4	31;	;1-	3+								10MS	TMS	
91	159	USSR 3	08850-2	4/;/23	;/;1/4	;/2	31;/;/2	4/13;/;1-/2	4/2	2/4	-	4/13-;/2	2-	2/3	2+3/3+	3	2/3+	3/2	3+/2-		30MS	0/20MS	BIN
	160	USSR 3	08577-4	4	4	4	4	31	4	4	4	4/31;	3+								70S	80S	
	161	Local c	McNair 701	4	4	4	4	4	4	4	4	4	3+								100S	100S	
	162	Local c	Red Chief	2+3	2+3	4	2+3	2+3	4	4	2+3	4	3								80S	90S	

Notes and explanations for seedling stem rust testing:

STEM RUST

St. Paul, MN Yue Jin

Race Common US race: MCCFC, QFCSC, QTHJC, RCRSC, RKQQC, TPMKC, TTTTF of Puccnia graminis f. sp. tritici
2 US races with unique virulence were added: GCMNC (virulenct to Sr36), QCCSM (virulent to Sr24)
For updated race nomenclature, please refer to: Jin et al. 2008 Plant Dis. 92:923-926.

Ratir Infection type (IT) 3 or 4 are considered susceptible
"/" 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), and other foreign races with significant virulence. In this season's nursery, a new race TKTTF that caused a stem rust epidemic in Ethiopia in 2013 was added.

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

race	Avirulence	Virulence	Uniqueness for their use
MCCFC	6 8a 9b 9d 9e 11 24 30 31 36 38	5 7b 9a 9g 10 17 Tmp McN	Historical importance & viruelent on SrTmp
QCCSM	6 7b 8a 9b 9e 11 30 31 36 38 Tmp	5 9a 9d 9g 10 17 21 24 McN	Virulent on Sr24 but avirulent to many common races
QFCSC	6 7b 9b 9e 11 24 30 31 36 38 Tmp	5 8a 9a 9d 9g 10 17 21 McN	Most prevalent
QTHJC	7b 9a 9e 24 30 31 36 Tmp	5 6 8a 9b 9d 9g 10 11 17 21 38 McN	Historical importance
RCRSC	6 8a 9e 11 24 30 31 Tmp	5 7b 9a 9b 9d 9g 10 17 21 38 McN	Virulent on Sr36
RKQQC	9e 10 11 17 24 30 31 38 Tmp	5 6 7b 8a 9a 9b 9d 9g 21 McN	Virulent on Sr36
GFMNC	5 6 7b 8a 9b 9d 11 24 30 31 38 Tmp	9a 9g 10 11 17 21 36 McN	A new race from WA with virulence to Sr36, avirulent to many others
TPMKC	6 9a 9b 24 30 31 38	5 7b 8a 9a 9d 9e 9g 10 11 17 21 36 Tmp McN	Historican significance, broad virulence, including SrTmp
TTTTF	24 31	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 36 38 McN	Broad virulence
TTKSK	24 36 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 31 38 McN	Commonly known as Ug99, virulence on Sr31, Sr38, Kenya origin
TTKST	36 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 24 30 31 38 McN	Variant of TTKSK with virulence on Sr24
TTTSK	24 Tmp	5 6 7b 8a 9a 9b 9d 9e 9g 10 11 17 21 30 31 36 38 McN	Variant of TTKSK with virulence on Sr36
TRTTF	8a 9e 24 31	5 6 7b 9b 9d 9g 10 11 17 21 30 36 38 McN	Significant virulence, to 1A.1R in particular, Yemen origin
RRTTF	8a 24 31	5 6 7b 9b 9d 9e 9g 10 11 17 21 30 36 38 McN	Significant virulence, Pakistan origin
TKTTF	11 24 31	5 6 7b 8a 9b 9d 9e 9g 10 17 21 30 36 38 McN	Significant virulence, caused the 2013 epidemic in Ethiopia

Notes and explanations for field stem rust testing:

Nursery plan Entries were planted in 1-m row plots perpendicular to spreader rows of mixed susceptible wheat lines
Two nursery sites, X-13 field and Buckthorn field, were used to increase winter survival
Entries were planted into flowering buckwheat in X-13 field and bare soil in buckthorn field
Winter survival in both fields were nearly 100%

Inoculations: nurseries were inoculated by needle injection of spreader row plants at jointing stage and spray inoculations from late jointing to heading stages

Race A composite of the following stem rust races was used as inoculum for field inoculationy: QFCSC, QTHJC, RCRSC, RKQQC, and TPMKC

Note Stem rust infection responses (R, MR, MS, S or combination thereof) and disease severity (in percentage) were rated when entries were at the soft dough stage
BIN-Black internode, a likely indication of the presence of Sr2, a more reliable trait than PBC in St. Paul
PBS-Pseudo black chaff, a likely indication of the presence of Sr2, but a difficult trait to score in St. Paul due to FHB and other blights

Other notes: High Fusarium head blight was observed in both nurseries due to natural infections, up to 80% in FHB index in some susceptible entries.
Obvious low FHB was noted.

STRIPE RUST

Fayetteville
AR
Milus

		rep 1	rep 2	rep 3	Mean
1	AGS 2000	50	50	70	56.7
2	USG 3555	0	2	2	1.3
3	Jamestown	0	0	0	0.0
4	USG 3120	0	0	15	5.0
5	KWS013	15	2	85	34.0
6	LA03200E-2	0	0	7	2.3
7	LA05130D-P5	0	0	0	0.0
8	MD04W249-11-7	50	50	70	56.7
9	NC09-20768	7	0	7	4.7
10	NC09-20986	30	15	50	31.7
11	NC09-22402	0	0	0	0.0
12	NC8170-4-3	50	15	70	45.0
13	VA10W-96	70	0	70	46.7
14	VA11W-108	0	0	2	0.7
15	VA11W-230	0	0	2	0.7
16	VA11W-106	2	.	0	1.0
17	TN1401	7	7	50	21.3
18	KWS026	50	15	30	31.7
19	KWS027	0	2	0	0.7
20	OK11754WF	50	7	50	35.7
21	TXE21	2	0	15	5.7
22	MDC07026-12-30	93	85	98	92.0
23	MD04W8-12-3	50	50	70	56.7
24	GA03564-12E6	30	15	30	25.0
25	GA071630-12LE9	0	15	15	10.0
26	GA04434-12LE28	0	0	2	0.7
27	GA04417-12E33	2	0	15	5.7
28	AR04002-3	0	0	15	5.0
29	AR04008-5	0	0	15	5.0
30	LA05145D-21	0	0	15	5.0
31	LA06027E-P7	0	0	0	0.0
32	08850-2	7	30	50	29.0
33	08577-4	70	70	70	70.0

LOCATION MEANS
GROWTH STAGE / DATE June 9

STRIPE RUST

		Griffin GA Johnson 0-9	Plains GA Johnson 0-9	Laurel Springs NC Marshall	Farmersville TX Sutton 0-9
1	AGS 2000	6	9	6	0
2	USG 3555	0	0	0	0
3	Jamestown	0	0	2	0
4	USG 3120	2	4	6	0
5	KWS013	5		5	0
6	LA03200E-2	1		2	5
7	LA05130D-P5	1		2	0
8	MD04W249-11-7	5		6	0
9	NC09-20768	5	0	6	0
10	NC09-20986	1	4	6	0
11	NC09-22402	1	0	3	0
12	NC8170-4-3	3	2	7	0
13	VA10W-96	1	3	0	0
14	VA11W-108	0	0	3	0
15	VA11W-230	0	2	2	0
16	VA11W-106	1	0	3	0
17	TN1401	3	0	8	0
18	KWS026	4		8	6
19	KWS027	0		5	0
20	OK11754WF	0	0	0	9
21	TXE21	0	1	0	0
22	MDC07026-12-30	7	9	9	0
23	MD04W8-12-3	3		8	0
24	GA03564-12E6	1	3	0	0
25	GA071630-12LE9	1	2	0	0
26	GA04434-12LE28	0	2	0	0
27	GA04417-12E33	0	3	2	0
28	AR04002-3	0	0	3	0
29	AR04008-5	1	0	6	0
30	LA05145D-21	2		6	3
31	LA06027E-P7	0	0	0	0
32	08850-2	2	0	7	0
33	08577-4	7		9	0
LOCATION MEANS		1.9	1.8	3.9	0.7
GROWTH STAGE / DATE				May 29	

STRIPE RUST (SEEDLING)

TABLE XMC1416GH. STRIPE RUST INFECTION TYPE (IT) ON SEEDLINGS AND ADULT-PLANTS OF CULTIVARS AND LINES IN THE WINTER SOUTHERN WHEAT NURSERY (EXP16) COORDINATED BY HAROLD BOCKLMAN (UNIFORM EASTERN SOFT RED WINTER WHEAT NURSERY) TESTED WITH SELECTED *Puccinia striiformis* f. sp. *tritici* (PST) RACES UNDER CONTROLLED GREENHOUSE CONDITIONS AT LOW TEMPERATURES (DIURNAL TEMPERATURES GRADUALLY CHANGING FROM 4 TO 20°C FOR THE SEEDLING TESTS AND AT HIGH TEMPERATURES (DIURNAL TEMPERATURES GRADUALLY CHANGING FROM 10 TO 30°C) FOR THE ADULT-PLANT TESTS

Cultivar/ Designation	Pedigree	Bock. Entry No.	Contributo	1st year in nurs.	2014 PLOT	Infection type produced by PST races[a]								Possible HTAP[c] resistance
						Seedling Test[b] (4 - 20 C)					Adult-plant Test[b] (10 - 30 C)			
						PSTv-4	PSTv-14	PSTv-37	PSTv-40	PSTv-51	PSTv-14	PSTv-37	PSTv-40	
AGS 2000	Pio.2555/PF84301//FL 302 (f	1	Check	97-98	1	8	8	8	8	8	5,5,5	5,5,5	5.5.5	Low
USG 3555	VA94-52-60/Pio2643//USG3209	2	Check	04-05	2	8	8	8	7	8	2,2,3	2,2,2	2.2.3	High
Jamestown	Roane/Pioneer Brand 2691 (fo	3	Check	04-05	3	2	2	8	2	2	2,2,2	2,2,2	2.2.2	High
USG 3120	SS524/GA96004//AGS2000 (fc	4	Check	07-08	4	2	2(3),5(4)	2(2),5(4)	8	2,8(2)	2,2,3	2,3,3	8.8.8	No
KWS013	VA96W-49/AGS2000/VA98W-43	5	Murche	12-13	5	8	8	8	2,8	8	3,3,3	8,8,8	3,3,3	No
LA03200E-2	NC98-24710/P26R61	6	Harrison	12-13	6	2,8	8	8	8	8	3,5,5	5,5,5	2,2,2	Moderate
LA05130D-P5	LA98149BUB-3-4-B/SS8641	7	Harrison	12-13	7	8	8	2	2,5	5	2,2,3	2,2,2	2,2,2	High
MD04W249-11-7	MV8-29/25R42	8	Cooper	12-13	8	2,8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
NC09-20768	NC00-16203//P26R24/NC96-13	9	Murphy	13-14	9	8	8	8	8	8	8,8,8	3,3,8	8,8,8	No
NC09-20986	NC00-15332/VA01-476//Domini	10	Murphy	13-14	10	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
NC09-22402	NC99-18235/NC00-16203//Dom	11	Murphy	13-14	11	8	8	8	8	8	3,3,3	7,7,7	5,5,5	Low
NC8170-4-3	NC03-11458/Bess//SS8641	12	Murphy	13-14	12	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
VA10W-96	FG95195(SWN6828-6AP/C9766/	13	Griffey	13-14	13	8	8	8	8	8	2,2,2	2,2,2	2,2,2	High
VA11W-108	P25R47/Jamestown	14	Griffey	13-14	14	8	8	8	8	5	2,2,3	2,3,3	2,2,2	High
VA11W-230	SS520(FFR555W/GA-Gore/GF95	15	Griffey	13-14	15	8	8	5	5	8	2,2,2	2,2,2	2,2,2	High
VA11W-106	P25R47/Jamestown	16	Griffey	13-14	16	8	8	2,8	8	8	3,3,3	2,2,2	5,5,3	Moderate
TN1401	MO0-3701/TN603//OH708/[Fost	17	West	13-14	17	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
KWS026	B990081//M00-3701/M01-4377	18	Murche	13-14	18	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
KWS027	X00-1079/Branson	19	Murche	13-14	19	8	8	8	8	8	2,2,2	5,5,5	2,2,2	Low
OK11754WF	(TOB/ERA//TOB/CNO67/3/PLO/4	20	Carver	13-14	20	2,5	8	8	2	8	5,5,5	5,5,5	2,2,2	Low
PS 279	**(SUSCEPTIBLE CHECK)**				**21**	**8**	**8**	**8**	**8**	**8**	**8,8,8**	**8,8,8**	**8,8,8**	**No**
TXE21	961565-2E46/AGS2485//96229-	21	Sutton	13-14	22	8	8	2,5(1)	2	2	2,2,2	2,2,2	2,2,2	High
MDC07026-12-30	SS8641//MCCormick*2/Ning784	22	Cooper	13-14	23	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
MD04W8-12-3	Chesapeake/25R42	23	Cooper	13-14	24	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
GA03564-12E6	SS8641/4/A2000*3/931433//P2	24	Johnson	13-14	25	2,8	8	5	2,8(1)	2,8(1)	2,2,2	2,2,2	2,2,2	High

STRIPE RUST (SEEDLING)

Cultivar/ Designation	Pedigree	Bock. Entry No.	Contributo	1st year in nurs.	2014 PLOT	Infection type produced by PST races[a]								Possible HTAP[c] resistance
						Seedling Test[b] (4 - 20 C)					Adult-plant Test[b] (10 - 30 C)			
						PSTv-4	PSTv-14	PSTv-37	PSTv-40	PSTv-51	PSTv-14	PSTv-37	PSTv-40	
GA071630-12LE9	GA011636/2*GA991371-12	25	Johnson	13-14	26	8	2,5(2)	8,2(1)	2,8(1)	2,5	2,2,2	5,5,2	2,2,2	Moderate
GA04434-12LE28	GA961565-2E46/AGS2485//S86	26	Johnson	13-14	27	8	8,2(2)	2,5(1)	2	8	3,3,3	2,2,2	2,2,2	Moderate
GA04417-12E33	GA961565-2E46/AGS2485//S86	27	Johnson	13-14	28	5,8	2,5(1)	2	8	8	2,2,2	2,2,2	2,2,2	High
AR04002-3	AR800-1-3-1/AR93005-6-5	28	Mason	13-14	29	2,5	2	2	2	2	2,2,2	2,2,2	2,2,2	Unknown
AR04008-5	AR93005-6-5/C9375	29	Mason	13-14	30	5,7	2	8	2	2	2,2,2	3,3,5	2,2,2	Moderate
LA05145D-21	Jamestown/LA97113UC-124	30	Harrison	13-14	31	8	8	8	8	8	5,5,5	5,5,5	5,5,5	Low
LA06027E-P7	AGS2010/AGS2060	31	Harrison	13-14	32	8	2,5(2)	2,5	2	2,8	2,2,2	2,2,2	2,2,2	Unknown
08850-2	AGS2000/92226E2-5-3	32	Obert	13-14	33	2,5	8	8	8	8	5,5,5	5,5,5	3,3,5	Low
08577-4	X00-1079/M98-2023	33	Obert	13-14	34	8	8	8	8	8	8,8,8	8,8,8	8,8,8	No
PS 279	**(SUSCEPTIBLE CHECK)**				**35**	**8**	**8**	**8**	**8**	**8**	**8,8,8**	**8,8,8**	**8,8,8**	**No**
PS 279	**(SUSCEPTIBLE CHECK)**				**36**	**8**	**8**	**8**	**8**	**8**				
PS 279	**(SUSCEPTIBLE CHECK)**				**37**	**8**	**8**	**8**	**8**	**8**				
PS 279	**(SUSCEPTIBLE CHECK)**				**38**	**8**	**8**	**8**	**8**	**8**				
END OF NURSERY	**HUNDRED BARLEY (FILL)**				**40**	**-**	**-**	**-**	**-**	**-**				

[a] Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT and the number of plants for each IT is indicated in "( )". For adult-plant tests, if the flag leaf has a IT different from the leaf below, the ITs are separated by"/" with the flag leaf IT first.

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

PSTv-4: **1,6,9,17,27,SP,Tye**/5,7,8,10,15,24,32,43,44,Tr1,Exp2
PSTv-14: **1,6,7,8,9,17,27,43,44,Tr1,Exp2,Tye**/5,10,15,24,32,SP
PSTv-37: **6,7,8,9,17,27,43,44,Tr1,Exp2**/1,5,10,15,24,32,SP,Tye
PSTv-40: **6,7,8,9,10,24,27,32,43,44,Tr1,Exp2**/1,5,15,17,SP,Tye
PSTv-51: **1,6,7,8,9,10,17,24,27,32,43,44,SP,Tr1,Exp2,Tye**/5,15

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

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

STRIPE RUST

TABLE XMC1416F. STRIPE RUST INFECTION TYPE (IT[a]) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE WINTER SOUTHERN WHEAT NURSERY (EXP16) (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, 2014 UNDER NATURAL INFECTION
NOTE: THE WALLA WALLA (LOC 06) AND LIND (LOC 07) SITES DID NOT PRODUCE DATA AS STRIPE RUST WAS TOO LOW

				1st		LOC 04		LOC 05						
		Bock.		year		6/24		4/30		6/3			Field	Possible
Cultivar/		Entry		in	2014	Milk		Stem Elong.		Flowering		Field	overall	HTAP
Designation	Pedigree	No.	Contributor	nurs.	PLOT	IT	%	IT	%	IT	%	summary[d]	rating[e]	resistance[f]
AGS 2000	Pio.2555/PF84301//FL 302 (forme	1	Check	97-98	1	8	60	8	80	8	60	MS	7	Low
USG 3555	VA94-52-60/Pio2643//USG3209 (for	2	Check	04-05	2	3	5	2	10	2	20	R	2	High
Jamestown	Roane/Pioneer Brand 2691 (forme	3	Check	04-05	3	5	10	3	20	3	20	MR	3	High
USG 3120	SS524/GA96004//AGS2000 (forme	4	Check	07-08	4	8	80	8	40	5	30	S	8	No
KWS013	VA96W-49/AGS2000/VA98W-430	5	Murche	12-13	5	8	80	8	60	2	20	S	8	No
LA03200E-2	NC98-24710/P26R61	6	Harrison	12-13	6	3	10	2	10	3	20	MR	3	Moderate
LA05130D-P5	LA98149BUB-3-4-B/SS8641	7	Harrison	12-13	7	5	10	3	20	2	20	MR	3	High
MD04W249-11-7	MV8-29/25R42	8	Cooper	12-13	8	8	90	8	60	3	40	S	9	No
NC09-20768	NC00-16203//P26R24/NC96-13965	9	Murphy	13-14	9	8	70	8	80	2	5	S	8	No
NC09-20986	NC00-15332/VA01-476//Dominion	10	Murphy	13-14	10	8	80	5	30	2	20	S	8	No
NC09-22402	NC99-18235/NC00-16203//Dominio	11	Murphy	13-14	11	8	10	5	30	2	10	MR-MS	5	Low
NC8170-4-3	NC03-11458/Bess//SS8641	12	Murphy	13-14	12	8	50	8	80	4	50	MS	7	No
VA10W-96	FG95195(SWN6828-6AP/C9766//M	13	Griffey	13-14	13	2	10	5	30	4	40	MR	4	High
VA11W-108	P25R47/Jamestown	14	Griffey	13-14	14	5	15	2	10	3	20	MR	3	High
VA11W-230	SS520(FFR555W/GA-Gore/GF9512	15	Griffey	13-14	15	2	5	2	10	5	30	MR	4	High
VA11W-106	P25R47/Jamestown	16	Griffey	13-14	16	8	40	2	10	2	20	MS	6	Moderate
TN1401	MO0-3701/TN603//OH708/[Foster/P	17	West	13-14	17	8	60	8	80	5	60	MS	7	No
KWS026	B990081//M00-3701/M01-4377	18	Murche	13-14	18	8	80	8	80	2	10	S	8	No
KWS027	X00-1079/Branson	19	Murche	13-14	19	8	30	2	10	2	**10**	MS	6	Low
OK11754WF	(TOB/ERA//TOB/CNO67/3/PLO/4/V	20	Carver	13-14	20	8	50	2	10	3	20	MS	7	Low
PS 279	**(SUSCEPTIBLE CHECK)**				**21**	**8**	**100**	**8**	**80**	**8**	**100**	S	9	**No**
TXE21	961565-2E46/AGS2485//96229-3A4	21	Sutton	13-14	22	2	10	2	10	2	10	R	2	High
MDC07026-12-30	SS8641//MCCormick*2/Ning7840	22	Cooper	13-14	23	8	100	8	80	8	100	S	9	No
MD04W8-12-3	Chesapeake/25R42	23	Cooper	13-14	24	8	100	8	80	8	100	S	9	No
GA03564-12E6	SS8641/4/A2000*3/931433//P2684/	24	Johnson	13-14	25	3	5	3	20	4	40	MR	4	High
GA071630-12LE9	GA011636/2*GA991371-12	25	Johnson	13-14	26	3	10	3	20	4	30	MR	4	Moderate
GA04434-12LE28	GA961565-2E46/AGS2485//S8641	26	Johnson	13-14	27	8	5	2	10	3	20	MR	4	Moderate
GA04417-12E33	GA961565-2E46/AGS2485//S8641	27	Johnson	13-14	28	8	5	2	10	3	20	MR	4	High
AR04002-3	AR800-1-3-1/AR93005-6-5	28	Mason	13-14	29	2	10	2	10	2	20	R	2	Unknown
AR04008-5	AR93005-6-5/C9375	29	Mason	13-14	30	8	30	5	30	2	20	MS	6	Moderate
LA05145D-21	Jamestown/LA97113UC-124	30	Harrison	13-14	31	8	50	8	60	4	30	MS	7	Low
LA06027E-P7	AGS2010/AGS2060	31	Harrison	13-14	32	2	5	2	10	2	10	R	2	Unknown

STRIPE RUST

Cultivar/ Designation	Pedigree	Bock. Entry No.	Contributor	1st year in nurs.	2014 PLOT	LOC 04 6/24 Milk IT	LOC 04 6/24 Milk %	LOC 05 4/30 Stem Elong. IT	LOC 05 4/30 Stem Elong. %	LOC 05 6/3 Flowering IT	LOC 05 6/3 Flowering %	Field summary[d]	Field overall rating[e]	Possible HTAP resistance[f]
08850-2	AGS2000/92226E2-5-3	32	Obert	13-14	33	8	50	3	15	2	10	MS	7	Low
08577-4	X00-1079/M98-2023	33	Obert	13-14	34	8	90	8	80	8	80	S	9	No
PS 279	**(SUSCEPTIBLE CHECK)**				**35**	**8**	**100**	**8**	**80**	**8**	**100**	S	9	**No**
PS 279	**(SUSCEPTIBLE CHECK)**				**36**	**8**	**100**	**8**	**80**	**8**	**100**	S	9	
PS 279	**(SUSCEPTIBLE CHECK)**				**37**	**8**	**100**	**8**	**80**	**8**	**100**	S	9	
PS 279	**(SUSCEPTIBLE CHECK)**				**38**	**8**	**100**	**8**	**80**	**8**	**100**	S	9	
END OF NURSERY	**HUNDRED BARLEY (FILL)**				**40**	**-**	**-**	**-**	**-**	**-**	**-**			

[a] Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs.

[b] LOC 04 near Pullman, WA were artificially inoculated with a mixture of races PSTv-14 (virulent to *Yr6*, *Yr7*, *Yr8*, *Yr9*, *Yr17*, *Yr27*, *Yr43*, *Yr44*, *YrTr1*, *YrExp2*, and *YrTye* but avirulent to *Yr1*, *Yr5*, *Yr10*, *Yr15*, *Yr24*, *Yr32*, and *YrSP*) and PSTv-37 (virulent to *Yr6*, *Yr7*, *Yr8*, *Yr9*, *Yr17*, *Yr27*, *Yr43*, *Yr44*, *YrTr1*, and *YrExp2*, but avirulent to *Yr1*, *Yr5*, *Yr10*, *Yr15*, *Yr24*, *Yr32*, *YrSP*, and *YrTye*). LOC 05 was under natural infection.

[c] Entries with a high IT in the first note, but a low IT in the second note at Mt. Vernon may indicate that they have high-temperature, adult-plant (HTAP) resistance.

[d] R = resistant, MR = moderately resistant, MS = moderately susceptible, and S =susceptible.

[e] 1 = most resistant and 9 most susceptible.

Note: The summary and ratings are based on the highest IT and % severity to discourge use of race-specific resistance.

[f] The high-temperature adult-plant (HTAP) resistance data were based on greenhouse tests. Unknown = Whether the entry has HTAP resistance or not couldn't be determined as it was resistant to all tested races in the seedling stage. TBT = to be tested. Entries with the combination of *Yr5* and/or *Yr15* may not have HTAP resistance but their resistance should be highly effective as no races virulent to either of the genes are found in the US.

STRIPE RUST

		05.18.14	06.08.14	06.08.14	06.17.14	06.17.14	6.25.14	6.25.14	06.30.14
ENTRY NO.	CULTIVAR/ DESIGNATION	GROWTH STAGE Feekes	STRIPE RUST Central Ferry 0-9	STRIPE RUST Central Ferry 1-100	STRIPE RUST Central Ferry 0-9	STRIPE RUST Central Ferry 1-100	STRIPE RUST Pullman 0-9	STRIPE RUST Pullman 1-100	CEPHALOSPORIUM STRIPE 1-3
1	AGS 2000	59	5	8	6	23	8	89	3
2	USG 3555	59	3	2	2	4	6	15	2
3	Jamestown	60	2	2	3	3	5	12	2
4	USG 3120	60	4	6	6	14	8	88	3
5	KWS013	60	5	9	6	16	8	87	3
6	LA03200E-2	56	2	2	3	4	5	13	2
7	LA05130D-P5	56	2	2	5	5	8	42	2
8	MD04W249-11-7	56	6	12	7	37	8	93	3
9	NC09-20768	53	4	9	7	23	8	73	3
10	NC09-20986	58	5	3	7	30	8	72	3
11	NC09-22402	54	2	2	2	4	4	20	2
12	NC8170-4-3	57	8	8	8	47	8	84	2
13	VA10W-96	60	2	2	4	6	7	52	3
14	VA11W-108	57	2	2	3	7	5	25	2
15	VA11W-230	57	2	2	2	3	2	8	2
16	VA11W-106	54	2	2	4	4	6	22	3
17	TN1401	59	5	7	7	17	8	90	3
18	KWS026	59	5	7	5	15	8	83	3
19	KWS027	53	2	2	2	3	7	50	3
20	OK11754WF	57	2	2	3	3	7	48	2
21	TXE21	54	2	2	2	2	5	17	3
22	MDC07026-12-30	56	8	43	8	70	8	97	3
23	MD04W8-12-3	60	6	18	8	70	8	97	2
24	GA03564-12E6	59	4	2	7	7	8	53	3
25	GA071630-12LE9	52	2	2	6	4	8	53	3
26	GA04434-12LE28	54	2	2	5	4	6	23	3
27	GA04417-12E33	58	2	2	4	3	6	15	3
28	AR04002-3	59	3	2	3	4	6	18	3
29	AR04008-5	59	2	2	4	12	8	62	3
30	LA05145D-21	58	4	3	5	12	8	87	3
31	LA06027E-P7	55	2	2	2	2	4	10	1
32	08850-2	59	4	5	6	8	8	40	2
33	08577-4	58	7	7	8	30	8	95	3
Max		60	8	43	8	70	8	97	3
Min		52	2	2	2	2	2	8	1
Average		57.1	3.6	5.5	4.8	14.9	52.5	6.8	2.6
CV		2.6	30.9	72.7	29.2	67.7	22.7	14.0	21.4
se		2.3	1.2	16.2	2.0	102.3	141.9	0.9	0.3
LSD		2.4	1.8	6.5	2.3	16.2	19.1	1.5	0.9

COMMENTS Stripe rust came in late this year. The most reliable ratings are from Pullman. If a line is rated as susceptible early, it is quite susceptible.
The Cephalosporoium stripe rating was a visual 1-3 based on stunting and leaf symptoms in an inoculated nursery, compared to the susceptible check cutlivar, Stephens.

SEPTORIA

		Belle Mina AL Glass		Harrisburg IL Murche	Battle Ground IN Brown	Laurel Springs NC Marshall
		tritici Leaf Blotch 0-9	nodorum Glume Blotch 0-9	tritici Leaf Blotch 0-9	tritici Leaf Blotch 0-9	nodorum Glume Blotch
1	AGS 2000	3	1	3.0	2.3	2
2	USG 3555	4	3	2.4	0.8	8
3	Jamestown	4	2	4.4	1.8	4
4	USG 3120	2	1	2.7	1.5	6
5	KWS013	4	3	3.4	2.0	7
6	LA03200E-2	3	2	2.2	1.5	4
7	LA05130D-P5	4	2	2.4	1.5	6
8	MD04W249-11-7	3	1	3.0	2.3	5
9	NC09-20768	3	2	2.9	1.8	5
10	NC09-20986	1	1	3.6	1.8	8
11	NC09-22402	3	4	2.3	2.3	4
12	NC8170-4-3	3	1	2.0	2.0	7
13	VA10W-96	3	1	6.0	3.0	7
14	VA11W-108	4	3	2.7	0.8	3
15	VA11W-230	2	2	1.9	2.4	5
16	VA11W-106	3	1	2.2	2.0	3
17	TN1401	4	1	2.9	2.0	5
18	KWS026	2	4	3.7	3.0	6
19	KWS027	2	1	3.2	2.0	3
20	OK11754WF	3	6	3.1	2.3	6
21	TXE21	4	2	2.2	1.5	3
22	MDC07026-12-30	3	1	2.7	1.8	8
23	MD04W8-12-3	2	1	6.7	3.8	7
24	GA03564-12E6	4	2	3.3	1.5	5
25	GA071630-12LE9	3	1	1.6	2.0	1
26	GA04434-12LE28	4	1	1.9	1.3	2
27	GA04417-12E33	3	2	3.6	2.0	3
28	AR04002-3	5	4	3.1	2.3	7
29	AR04008-5	4	1	1.6	2.5	7
30	LA05145D-21	3	1	2.9	2.3	6
31	LA06027E-P7	3	3	2.9	1.8	6
32	08850-2	2	3	4.0	2.0	6
33	08577-4	1	1	4.6	2.8	8
LOCATION MEANS		3.1	2.0	3.1	2.0	5.2
GROWTH STAGE / DATE					10.6	June 13

SEPTORIA

2013-14 Eastern Septoria Nursery

Checks in blue

Entry # Sept nurs	Other Test	Entry # other test	Designation	Means of 2 reps, 0-9 scale: Kinston Lvs	Kinston Gls	Lake Wheeler Lvs	Lake Wheeler Gls	MEAN ACROSS LOCS Lvs	MEAN ACROSS LOCS Gls
1	Sept ck (S)	1 - US	AGS 2000	7.0	1.0	7.0	1.0	7.0	1.0
2	Sept ck (MR)		AGS 2060	3.0	1.5	3.0	2.5	3.0	2.0
3	Sept ck (MR)		Neuse	4.5	2.5	3.5	2.0	4.0	2.3
4	Sept ck (MS)		USG 3209	5.0	4.0			5.0	4.0
5	Sept ck (S)	1 - UE	Branson	6.0	5.5	5.5	4.5	5.8	5.0
6	Sept ck (MR)	3 - UE	Shirley	4.0	6.0	3.0	3.5	3.5	4.8
7	Sept ck (MR)		Jensen	2.0		4.5	2.5	3.3	2.5
8	Sept ck (S)		Kaskaskia	6.0	3.5	6.5	5.0	6.3	4.3
9	Sept ck (MR)		Malabar	3.0	6.0	3.5	2.5	3.3	4.3
47	US	2	USG 3555		7.5	7.0	6.5	7.0	7.0
48	US	3	Jamestown		6.5	6.5	5.0	6.5	5.8
49	US	4	USG 3120	7.0	3.5	7.5	5.0	7.3	4.3
50	US	5	KWS013		5.0	6.5	6.5	6.5	5.8
51	US	6	LA03200E-2	7.0	4.5	5.5	4.5	6.3	4.5
52	US	7	LA05130D-P5	6.5	4.0	4.0	2.5	5.3	3.3
53	US	8	MD04W249-11-7		3.5	6.0	2.5	6.0	3.0
54	US	9	NC09-20768	5.0	2.0	3.0	2.0	4.0	2.0
55	US	10	NC09-20986	4.0	5.0	2.0	3.0	3.0	4.0
56	US	11	NC09-22402	5.0	2.5	3.5	3.0	4.3	2.8
57	US	12	NC8170-4-3	5.0	4.0	5.5	3.0	5.3	3.5
58	US	13	VA10W-96	7.0	5.5	5.0	2.5	6.0	4.0
59	US	14	VA11W-108	6.0	3.0	4.5	2.0	5.3	2.5
60	US	15	VA11W-230	4.5	3.5	5.0	4.0	4.8	3.8
61	US	16	VA11W-106	6.5	5.0	4.0	3.0	5.3	4.0
62	US	17	TN1401	6.5	4.5	5.0	3.0	5.8	3.8
63	US	18	KWS026		6.0	5.0	6.0	5.0	6.0
64	US	19	KWS027	3.0	3.0	5.0	3.0	4.0	3.0
65	US	20	OK11754WF	6.5	6.5	7.5	6.5	7.0	6.5
66	US	21	TXE21	5.0	2.0	3.5	3.5	4.3	2.8
67	US	22	MDC07026-12-30	6.0	6.5	4.5	2.5	5.3	4.5
68	US	23	MD04W8-12-3		4.0	7.0	4.5	7.0	4.3
69	US	24	GA03564-12E6	5.0	3.0	5.0	2.0	5.0	2.5
70	US	25	GA071630-12LE9	5.5	1.0	5.5	0.5	5.5	0.8
71	US	26	GA04434-12LE28	5.5	4.5	4.0	2.0	4.8	3.3
72	US	27	GA04417-12E33	5.5	3.5	5.5	2.5	5.5	3.0
73	US	28	AR04002-3	6.5	4.5	6.0	4.5	6.3	4.5
74	US	29	AR04008-5	6.0	4.0	6.0	3.0	6.0	3.5
75	US	30	LA05145D-21	7.0	4.0	5.0	2.5	6.0	3.3
76	US	31	LA06027E-P7	5.0	6.0	5.0	5.5	5.0	5.8
77	US	32	08850-2	4.0	4.0	4.0	5.0	4.0	4.5
78	US	33	08577-4		6.5	5.5	5.0	5.5	5.8

FUSARIUM HEAD BLIGHT (SCAB)

		Belle Mina AL Glass	Champaign IL Murche	Harrisburg IL Murche	Harrisburg IL Obert	
					Incidence	Severity
		0-9	0-9	0-9	0-9	0-9
1	AGS 2000	1	7.1	4.0	3	3
2	USG 3555	1	6.6	2.7	2	4
3	Jamestown	1	5.1	2.7	4	3
4	USG 3120	1	8.0	3.0	8	6
5	KWS013	1	7.5	5.3	6	4
6	LA03200E-2	1	7.6	2.7	3	5
7	LA05130D-P5	1	7.6	2.7	3	6
8	MD04W249-11-7	1	6.6	2.7	3	3
9	NC09-20768	1	7.6	3.0	3	3
10	NC09-20986	1	8.1	1.7	3	2
11	NC09-22402	1	7.7	2.7	2	3
12	NC8170-4-3	1	8.1	3.7	3	3
13	VA10W-96	1	7.5	4.3	4	6
14	VA11W-108	0	5.5	3.7	3	3
15	VA11W-230	2	5.9	3.7	4	3
16	VA11W-106	0	5.5	2.0	3	2
17	TN1401	1	6.1	4.0	4	4
18	KWS026	0	7.0	2.7	2	3
19	KWS027	0	7.0	1.7	1	2
20	OK11754WF	1	3.8	3.3	5	6
21	TXE21	1	8.5	2.7	3	3
22	MDC07026-12-30	1	4.9	1.7	2	2
23	MD04W8-12-3	1	6.9	1.7	3	3
24	GA03564-12E6	1	6.9	3.0	3	4
25	GA071630-12LE9	1	6.8	1.3	1	6
26	GA04434-12LE28	1	7.9	2.7	5	6
27	GA04417-12E33	1	6.4	5.0	5	4
28	AR04002-3	1	5.9	2.0	3	6
29	AR04008-5	1	6.4	2.7	4	5
30	LA05145D-21	1	6.9	2.7	3	3
31	LA06027E-P7	1	7.0	4.3	2	3
32	08850-2	1	6.4	3.7	3	3
33	08577-4	0	6.1	4.0	4	6
LOCATION MEANS		0.9	6.8	3.0	3.3	3.9

FUSARIUM HEAD BLIGHT (SCAB)

		Liberty IL Obert		Lexington KY Van Sanford	Baton Rouge LA Harrison
		Incidence 0-9	Severity 0-9	0-9	0-9
1	AGS 2000	6	5	7.0	6.0
2	USG 3555	7	4	2.0	4.0
3	Jamestown	2	3	2.0	3.0
4	USG 3120	6	4	7.0	4.0
5	KWS013	7	6	3.5	4.0
6	LA03200E-2	7	4	6.5	3.5
7	LA05130D-P5	6	6	5.0	4.5
8	MD04W249-11-7	1	2	2.5	3.0
9	NC09-20768	6	6	1.5	5.5
10	NC09-20986	3	2	2.0	3.0
11	NC09-22402	6	4	2.0	6.0
12	NC8170-4-3	6	5	2.0	4.0
13	VA10W-96	5	6	3.5	4.5
14	VA11W-108	3	4	3.0	4.5
15	VA11W-230	4	5	2.5	2.0
16	VA11W-106	3	3	2.0	4.5
17	TN1401	5	4	2.5	5.0
18	KWS026	4	3	1.5	4.0
19	KWS027	4	3	2.5	4.5
20	OK11754WF	5	4	3.5	4.0
21	TXE21	8	7	5.0	7.0
22	MDC07026-12-30	3	2	1.0	2.5
23	MD04W8-12-3	4	3	2.0	4.0
24	GA03564-12E6	5	6	5.0	5.0
25	GA071630-12LE9	4	5	7.0	8.5
26	GA04434-12LE28	6	7	6.5	6.0
27	GA04417-12E33	7	8	7.0	4.5
28	AR04002-3	4	3	4.5	4.0
29	AR04008-5	5	5	3.0	4.0
30	LA05145D-21	6	5	3.0	3.5
31	LA06027E-P7	6	6	2.0	5.0
32	08850-2	6	5	2.0	5.0
33	08577-4	6	5	2.5	4.0
LOCATION MEANS		5.0	4.5	3.5	4.4

FUSARIUM HEAD BLIGHT (SCAB)

		Winnsboro LA Harrison		Queenstown MD Conway
		FHB	FDK	
		0-9	%	0-9
1	AGS 2000	5.5	22.5	1.5
2	USG 3555	5.0	37.5	1.5
3	Jamestown	5.0	22.5	1.5
4	USG 3120	6.0	37.5	2.0
5	KWS013	3.5	20.0	3.5
6	LA03200E-2	3.5	22.5	2.0
7	LA05130D-P5	7.5	32.5	1.5
8	MD04W249-11-7	4.5	10.0	0.0
9	NC09-20768	4.5	30.0	1.5
10	NC09-20986	4.5	20.0	2.0
11	NC09-22402	5.0	32.5	1.0
12	NC8170-4-3	6.5	25.0	1.5
13	VA10W-96	3.5	20.0	4.5
14	VA11W-108	3.5	17.5	1.5
15	VA11W-230	5.0	7.5	2.5
16	VA11W-106	5.0	20.0	1.5
17	TN1401	2.5	15.0	2.0
18	KWS026	3.5	5.0	1.0
19	KWS027	7.0	32.5	1.0
20	OK11754WF	4.5	22.5	2.5
21	TXE21	3.5	32.5	3.0
22	MDC07026-12-30	4.5	12.5	0.5
23	MD04W8-12-3	5.0	12.5	2.5
24	GA03564-12E6	3.0	37.5	2.0
25	GA071630-12LE9	5.0	32.5	0.5
26	GA04434-12LE28	3.0	32.5	2.5
27	GA04417-12E33	5.5	37.5	3.5
28	AR04002-3	4.5	12.5	0.5
29	AR04008-5	6.0	17.5	1.5
30	LA05145D-21	5.0	22.5	0.5
31	LA06027E-P7	5.0	32.5	1.5
32	08850-2	5.0	12.5	1.5
33	08577-4	6.0	17.5	1.5
LOCATION MEANS		4.7	23.2	1.7

POWDERY MILDEW

		Quincy FL Babar 0-9	Griffin GA Johnson 0-9	Kinston NC Murphy 0-9	Raleigh NC Marshall PM1	Raleigh NC Marshall PM2
1	AGS 2000	0	0	3	0	0
2	USG 3555	0	0	1	0	0
3	Jamestown	1	0	1	0	0
4	USG 3120	1	0	1	0	0
5	KWS013	4	0	0	0	0
6	LA03200E-2	0	0	1	0	0
7	LA05130D-P5	0	0	0	0	0
8	MD04W249-11-7	0	0	1	0	0
9	NC09-20768	1	0	2	0	0
10	NC09-20986	2	0	1	0	0
11	NC09-22402	0	0	1	0	0
12	NC8170-4-3	0	0	1	0	0
13	VA10W-96	0	0	1	0	0
14	VA11W-108	0	0	1	0	0
15	VA11W-230	1	0	0	0	0
16	VA11W-106	1	0	0	0	0
17	TN1401	1	0	0	0	0
18	KWS026	3	0	0	0	0
19	KWS027	6	0	6	3	0
20	OK11754WF	6	4	4	5	9
21	TXE21	0	0	4	1	0
22	MDC07026-12-30	0	0	1	0	0
23	MD04W8-12-3	0	0	0	0	0
24	GA03564-12E6	0	0	0	0	0
25	GA071630-12LE9	0	0	0	0	0
26	GA04434-12LE28	0	0	0	0	0
27	GA04417-12E33	0	0	1	0	0
28	AR04002-3	1	0	1	0	0
29	AR04008-5	3	4	5	5	8
30	LA05145D-21	0	0	1	1	0
31	LA06027E-P7	0	0	1	1	0
32	08850-2	1	0	3	2	0
33	08577-4	1	0	4	3	0
LOCATION MEANS		1.0	0.2	1.4	0.6	0.5

POWDERY MILDEW

		Blacksburg VA Griffey 0-9	Warsaw VA Griffey 0-9
1	AGS 2000	1.0	0
2	USG 3555	0.0	0
3	Jamestown	1.0	0
4	USG 3120	1.0	0
5	KWS013	1.0	0
6	LA03200E-2	1.0	0
7	LA05130D-P5	0.0	0
8	MD04W249-11-7	0.5	0
9	NC09-20768	0.5	0
10	NC09-20986	0.5	0
11	NC09-22402	0.5	0
12	NC8170-4-3	0.5	0
13	VA10W-96	0.0	0
14	VA11W-108	0.5	0
15	VA11W-230	0.0	0
16	VA11W-106	1.0	0
17	TN1401	0.5	0
18	KWS026	0.5	0
19	KWS027	2.0	0
20	OK11754WF	7.0	5
21	TXE21	3.5	0
22	MDC07026-12-30	0.0	0
23	MD04W8-12-3	0.0	0
24	GA03564-12E6	0.5	0
25	GA071630-12LE9	0.0	0
26	GA04434-12LE28	1.0	0
27	GA04417-12E33	0.0	0
28	AR04002-3	0.0	0
29	AR04008-5	2.5	1
30	LA05145D-21	1.0	0
31	LA06027E-P7	0.0	0
32	08850-2	2.0	0
33	08577-4	3.0	0
LOCATION MEANS		1.0	0.2

BYDV

		Raleigh NC Marshall	
		BYDV1	BYDV2
1	AGS 2000	2	4
2	USG 3555	1	1
3	Jamestown	0	2
4	USG 3120	1	3
5	KWS013	1	3
6	LA03200E-2	5	4
7	LA05130D-P5	3	2
8	MD04W249-11-7	2	2
9	NC09-20768	1	3
10	NC09-20986	2	3
11	NC09-22402	1	0
12	NC8170-4-3	2	4
13	VA10W-96	1	2
14	VA11W-108	1	2
15	VA11W-230	1	1
16	VA11W-106	1	2
17	TN1401	0	3
18	KWS026	2	3
19	KWS027	1	3
20	OK11754WF	1	2
21	TXE21	0	3
22	MDC07026-12-30	1	2
23	MD04W8-12-3	1	2
24	GA03564-12E6	0	1
25	GA071630-12LE9	1	1
26	GA04434-12LE28	1	1
27	GA04417-12E33	1	2
28	AR04002-3	1	3
29	AR04008-5	2	2
30	LA05145D-21	1	2
31	LA06027E-P7	1	2
32	08850-2	1	4
33	08577-4	1	2
LOCATION MEANS		1.2	2.3

LEAF BLIGHTS

		Quincy FL Babar leaf disease complex	Champaign IL Murche bacterial leaf streak 0-9
1	AGS 2000	6	4.9
2	USG 3555	2	
3	Jamestown	6	3.8
4	USG 3120	7	1.7
5	KWS013	5	4.2
6	LA03200E-2	2	4.0
7	LA05130D-P5	3	2.3
8	MD04W249-11-7	1	2.6
9	NC09-20768	2	4.4
10	NC09-20986	1	4.8
11	NC09-22402	2	2.5
12	NC8170-4-3	1	4.5
13	VA10W-96	1	2.8
14	VA11W-108	1	2.3
15	VA11W-230	5	2.5
16	VA11W-106	1	2.5
17	TN1401	1	1.7
18	KWS026	1	2.3
19	KWS027	3	3.6
20	OK11754WF	8	2.4
21	TXE21	5	2.1
22	MDC07026-12-30	1	2.9
23	MD04W8-12-3	2	3.0
24	GA03564-12E6	3	3.2
25	GA071630-12LE9	4	0.7
26	GA04434-12LE28	2	2.7
27	GA04417-12E33	3	2.5
28	AR04002-3	3	2.4
29	AR04008-5	7	3.3
30	LA05145D-21	4	1.9
31	LA06027E-P7	5	1.8
32	08850-2	2	2.7
33	08577-4	2	2.9
LOCATION MEANS		3.1	2.9

HESSIAN FLY

		W Lafayette IN Cambron					Kinston NC Murphy
		Bio B R-S	Bio C R-S	Bio D R-S	Bio O R-S	Bio L R-S	0-9
1	AGS 2000	0-14	0-15	0-15	0-18	0-16	4.5
2	USG 3555	0-15	0-16	0-15	0-17	0-13	6.5
3	Jamestown	9-0	16-0	15-2	0-15	0-14	3.0
4	USG 3120	0-14	0-18	0-15	0-18	0-15	5.5
5	KWS013	0-17	0-19	0-14	0-13	0-17	5.5
6	LA03200E-2	15-0	17-0	14-2	15-0	17-0	3.0
7	LA05130D-P5	17-0	16-0	15-0	0-15	0-13	4.5
8	MD04W249-11-7	0-12	0-14	0-14	0-16	0-14	3.5
9	NC09-20768	0-18	0-18	0-16	0-13	0-16	6.5
10	NC09-20986	17-1	18-0	16-0	15-6	0-16	4.0
11	NC09-22402	0-17	0-18	0-20	0-18	0-16	6.5
12	NC8170-4-3	15-0	19-0	19-0	0-17	0-12	5.0
13	VA10W-96	0-17	11-4	0-16	0-13	0-13	4.5
14	VA11W-108	11-0	12-1	16-0	0-16	0-15	4.5
15	VA11W-230	11-0	9-0	17-0	8-0	0-15	2.0
16	VA11W-106	0-14	0-16	0-12	0-15	0-12	6.0
17	TN1401	0-15	0-16	0-14	0-16	0-15	6.5
18	KWS026	0-15	0-18	0-12	0-15	0-16	4.0
19	KWS027	0-10	16-1	0-15	0-14	0-12	5.5
20	OK11754WF	0-15	0-17	0-15	0-16	0-13	5.5
21	TXE21	0-16	0-13	0-15	0-15	0-14	6.0
22	MDC07026-12-30	15-0	15-0	15-0	0-16	0-16	3.5
23	MD04W8-12-3	0-16	0-12	0-12	0-15	0-13	5.0
24	GA03564-12E6	16-0	12-0	16-0	0-15	0-17	2.5
25	GA071630-12LE9	0-13	0-15	0-16	0-15	0-18	3.0
26	GA04434-12LE28	0-17	0-15	0-14	0-16	0-16	6.0
27	GA04417-12E33	16-0	16-0	15-0	0-12	0-13	1.5
28	AR04002-3	0-14	0-9	0-12	0-13	0-14	6.0
29	AR04008-5	0-16	0-13	0-15	0-16	0-13	6.0
30	LA05145D-21	13-1	8-5	0-15	0-14	0-13	4.0
31	LA06027E-P7	12-0	19-0	13-0	11-1	0-10	2.0
32	08850-2	0-15	0-11	7-6	1-15	0-12	5.0
33	08577-4	0-13	0-14	0-16	0-15	0-15	6.5

PHENOTYPE

		Baton Rouge LA Harrison	Winnsboro LA Harrison		Raleigh NC Marshall	
		Phenotype 0-9	Phenotype 0-9	Relative maturity 0-9	Growth habit 0-9	Phenotype
1	AGS 2000	4.0	4.0	4.5	4	7
2	USG 3555	3.8	4.0	5.5	5	2
3	Jamestown	3.7	3.0	4.5	5	2
4	USG 3120	3.3	3.0	4.0	3	2
5	KWS013	3.8	3.8	5.0	5	3
6	LA03200E-2	4.3	3.2	4.8	4	3
7	LA05130D-P5	4.8	4.3	5.5	5	5
8	MD04W249-11-7	4.7	4.2	6.5	5	6
9	NC09-20768	3.7	4.0	6.3	5	5
10	NC09-20986	4.2	3.3	5.5	5	4
11	NC09-22402	4.0	4.0	6.3	5	2
12	NC8170-4-3	3.8	3.8	6.0	7	2
13	VA10W-96	3.7	3.5	5.3	6	3
14	VA11W-108	3.3	3.8	6.3	7	3
15	VA11W-230	3.5	3.3	5.5	5	4
16	VA11W-106	3.8	4.0	6.5	7	4
17	TN1401	5.2	4.5	6.0	7	5
18	KWS026	5.0	4.5	5.5	8	5
19	KWS027	5.2	4.3	6.3	7	5
20	OK11754WF	5.7	3.8	4.5	3	7
21	TXE21	3.3	3.3	5.5	5	3
22	MDC07026-12-30	3.8	3.5	6.3	7	2
23	MD04W8-12-3	4.2	3.3	5.8	8	4
24	GA03564-12E6	2.8	3.2	5.3	5	2
25	GA071630-12LE9	3.3	3.5	6.0	5	2
26	GA04434-12LE28	3.2	3.8	5.8	5	2
27	GA04417-12E33	4.2	3.3	5.5	5	3
28	AR04002-3	5.7	4.5	5.8	6	4
29	AR04008-5	4.7	4.3	5.5	6	7
30	LA05145D-21	4.2	3.8	5.5	6	5
31	LA06027E-P7	5.3	4.0	5.5	5	5
32	08850-2	5.5	5.0	6.3	7	7
33	08577-4	6.5	3.5	6.3	7	5
LOCATION MEANS		4.2	3.8	5.6	5.6	3.9

ACID SOIL TOLERANCE

			Enid OK Carver	
		0-5	0-5	0-5
1	AGS 2000	0	1	1
2	USG 3555	0	0	0
3	Jamestown	3	2	2
4	USG 3120	1	0	0
5	KWS013	0	0	0
6	LA03200E-2	2	0	0
7	LA05130D-P5	1	1	0
8	MD04W249-11-7	1	0	0
9	NC09-20768	1	1	0
10	NC09-20986	1	0	1
11	NC09-22402	2	2	2
12	NC8170-4-3	1	2	1
13	VA10W-96	0	1	0
14	VA11W-108	1	1	1
15	VA11W-230	1	1	1
16	VA11W-106	2	1	0
17	TN1401	2	1	1
18	KWS026	4	5	5
19	KWS027	1	0	1
20	OK11754WF	2	0	2
21	TXE21	2	1	2
22	MDC07026-12-30	1	0	1
23	MD04W8-12-3	0	1	0
24	GA03564-12E6	1	2	1
25	GA071630-12LE9	1	2	2
26	GA04434-12LE28	0	0	1
27	GA04417-12E33	1	1	1
28	AR04002-3	3	3	3
29	AR04008-5	3	1	0
30	LA05145D-21	1	1	1
31	LA06027E-P7	1	0	1
32	08850-2	1	2	2
33	08577-4	1	1	1
GROWTH STAGE / DATE		Nov 20	Mar 10	Mar 28

HERBICIDE INJURY

		Knoxville TN West Full Stand %	Metribuzin injury 0-9
1	AGS 2000	68	3.3
2	USG 3555	23	5.7
3	Jamestown	62	4.3
4	USG 3120	63	3.0
5	KWS013	90	2.0
6	LA03200E-2	67	3.7
7	LA05130D-P5	53	3.7
8	MD04W249-11-7	37	3.7
9	NC09-20768	35	4.7
10	NC09-20986	65	3.0
11	NC09-22402	82	3.0
12	NC8170-4-3	63	3.0
13	VA10W-96	27	5.0
14	VA11W-108	60	3.3
15	VA11W-230	72	2.7
16	VA11W-106	60	3.3
17	TN1401	53	4.0
18	KWS026	75	2.7
19	KWS027	63	3.3
20	OK11754WF	63	2.7
21	TXE21	23	5.3
22	MDC07026-12-30	63	3.0
23	MD04W8-12-3	53	2.7
24	GA03564-12E6	78	3.3
25	GA071630-12LE9	73	2.3
26	GA04434-12LE28	48	4.0
27	GA04417-12E33	67	3.0
28	AR04002-3	68	3.0
29	AR04008-5	73	2.7
30	LA05145D-21	45	4.3
31	LA06027E-P7	73	3.3
32	08850-2	60	2.7
33	08577-4	70	3.0
LOCATION MEANS		59.9	3.4

Traits Measured at SWQL: Methods, Purpose and Units

TRAIT	METHOD	PURPOSE	UNITS
Test Weight	Modified AACC Method 55-10.01	Grain Size, Density, Packing Efficiency	Pounds / Bushel
Grain Protein	NIR Perten DA7200	Grain Protein Content	Percent
Kernel Hardness	Perten Single Kernel Characterization System (SKCS)	Kernel Hardness <40 is Considered Soft Wheat	0-100
Kernel Diameter	Perten Single Kernel Characterization System (SKCS)	Kernel Size	Millimeters
Kernel Weight	Perten Single Kernel Characterization System (SKCS)	Kernel Weight	Milligrams
Flour Yield	Mids + Break Flour as % of Initial Grain Weight	Milling Quality	Percent
Softness Equivalence	Break Flour as % of Total Flour Weight	Estimates Grain Hardness, Flour Particle Size	Percent
Flour Protein	NIR Unity Spectra-Star	Flour Protein Content	Percent
Solvent Retention Capacity Profile (SRC)	AACC Method 56-11.02	Solvent Affinity	Percent
	Lactic Acid	Gluten Strength	
	Sodium Carbonate	Damaged Starch	
	Sucrose	Content of Pentosans (Arabinoxylans)	
	Water	Overall water affinity	
Sugar-Snap Cookie Diameter	AACC Method 10-52.02 Baking Quality of Cookie Flour, Intermediate Method	Cookie spread	Centimeters
Sugar-Snap Cookie Top Grain		Visual Quality Cookie Surface	0-9 Higher is Better

Please view the link below for further SWQL Materials and Methods information.

http://www.ars.usda.gov/Research/docs.htm?docid=24858

Milling and Baking Measurements and Calculations for Evaluation of Breeder Samples

TRAIT	ABBREVIATION	DESCRIPTION / CALCULATION
Kernel Protein	KPRO	Percent Protein of Whole, Un-tempered Grain Measured on DA7200 (NIR)
Kernel Hardness	Hard	Scale of 0-100, Soft to Hard. Measured on Single Kernel Characterization System (SKCS)
Kernel Diameter	KDia	Measured on Single Kernel Characterization System (SKCS)
Kernel Weight	KW	Measured on Single Kernel Characterization System (SKCS)
Grain Weight	GW	Weight of Tempered, Whole Grain Sample
Bran	Bran	Weight of Milled Product Retained by 40-mesh* Screen (over 40)
Mids	Mids	Weight of Milled Product Retained by 94-mesh* Screen (over 94)
Break Flour	BkFl	Weight of Milled Product Passing Through 94-mesh* Screen
Percent Bran, Mids, Break Flour	%	Expressed as Percent of Grain Weight (Bran, Mids, or Break Flour/GW) x 100
Total Flour	Flour	BkFl + Mids
Flour Yield	FY	(Flour/GW) x 100
Softness Equivalence	SE	(BkFl/Flour) x 100
Flour Moisture	FMOIST	Percent Moisture of Wheat Flour by Unity NIR
Flour Protein	FPRO	Percent Protein of Wheat Flour by Unity NIR
Cookie Diameter	Cookie Dia	Total Diameter of 2 Baked Cookies (cm)
Cookie Top Grain	Cookie TopG	0-9 Visual Scale (0 worst, 9 best)
Solvent Retention Capacity Tests	SRC	Percentage of Solvent Retained by a Flour/Solvent Slurry After Centrifugation and Draining
Lactic Acid Sodium Carbonate Sucrose Water	LA SC SU WA	((residue wt/ flour wt)-1) x (86/(100 - %FMOIST)) x 100 flour wt = weight of dry flour residue wt= weight of drained, saturated flour

* Mesh size is the number of openings in the SSBC screen per linear inch; smaller particles pass through higher mesh number.

ADVANCED NURSERY EVALUATION
FOR SOFT WHEAT MILLING AND BAKING QUALITY
2014 CROP

Samples were composites from Belle Mina, AL; Knoxville, TN; Farmersville, TX; and Blacksburg, VA

Quality Data ***Entry in RED is the Check Used for This Evaluation**

Lab Number	Entry Number	Entry	Test Weight (LB/BU)	Kernel Protein (at 12%)	Kernel Hardness (0-100)	Kernel Diameter (mm)	Kernel Weight (mg)	Flour Yield (%)	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Carbonate SRC (%)	Cookie Diameter (cm)	Top Grade (0-9)
1450948	**1**	**AGS 2000**	**60.92**	**10.60**	**7.64**	**2.58**	**40.22**	**69.83**	**58.86**	**8.25**	**107.94**	**69.94**	**18.57**	**4**
1450949	2	USG 3555	59.30	11.31	14.79	2.53	38.78	67.12	54.83	8.76	118.83	73.45	18.04	1
1450950	3	Jamestown	61.32	11.16	14.36	2.45	32.66	66.82	58.62	8.36	122.58	72.64	18.25	1
1450951	4	USG 3120	61.30	10.38	11.54	2.64	42.17	69.49	57.19	8.03	102.53	67.94	17.96	1
1450952	5	KWS013	59.99	10.45	8.97	2.64	37.56	67.49	56.35	8.32	117.36	70.22	18.11	1
1450953	6	LA03200E-2	61.97	11.16	14.37	2.00	43.30	66.35	58.16	8.63	112.39	75.54	17.80	2
1450954	7	LA05130D-P5	61.16	10.90	12.30	2.63	43.12	69.10	53.60	8.39	123.84	71.94	18.16	3
1450955	8	MD04W249-11-7	60.79	10.94	17.21	2.47	38.33	67.14	56.46	8.51	101.00	70.56	18.28	3
1450956	9	NC09-20768	61.43	11.13	20.63	2.30	33.69	66.48	55.61	8.69	110.08	68.66	18.36	4
1450957	10	NC09-20986	61.61	11.64	20.59	2.39	32.48	66.15	58.39	9.04	141.67	71.22	17.48	1
1450958	11	NC09-22402	60.84	11.15	28.67	2.37	33.23	69.93	50.69	8.55	105.00	68.45	18.01	3
1450959	12	NC8170-4-3	61.40	10.95	23.19	2.32	33.79	69.28	53.84	8.37	130.53	65.39	18.30	5
1450960	13	VA10W-96	61.84	11.19	13.49	2.35	35.98	67.32	55.19	8.77	138.45	72.10	18.26	3
1450961	14	VA11W-108	59.60	10.70	12.09	2.30	34.56	66.00	62.78	7.86	118.93	72.32	18.08	5
1450962	15	VA11W-230	61.73	10.80	16.58	2.35	33.91	67.17	58.04	8.32	133.49	74.04	18.10	1
1450963	16	VA11W-106	59.42	10.30	8.98	2.42	35.11	66.80	60.78	7.86	109.71	70.82	18.48	3
1450964	17	TN1401	59.71	11.05	6.40	2.24	32.86	67.91	60.03	8.35	117.48	66.14	18.66	4
1450965	18	KWS026	61.11	10.49	16.16	2.31	32.52	67.87	57.55	7.68	120.32	70.12	18.47	5
1450966	19	KWS027	59.45	11.56	13.75	2.34	33.80	68.90	58.57	8.42	113.93	64.94	18.59	2
1450967	20	OK11754WF	58.68	11.03	8.72	2.69	40.37	67.30	58.92	8.43	138.92	68.21	18.01	3
1450968	21	TXE21	59.02	10.79	16.03	2.46	35.10	68.22	57.90	8.46	114.32	69.34	18.40	2
1450969	22	MDC07026-12-30	62.36	10.37	25.48	2.31	32.51	68.37	56.74	7.87	130.34	68.14	18.24	3
1450970	23	MD04W8-12-3	60.64	11.83	11.81	2.47	40.40	67.43	54.47	8.89	116.53	70.17	17.94	1
1450971	24	GA03564-12E6	61.95	10.49	17.78	2.63	40.51	68.81	54.56	8.15	130.08	69.59	17.98	3
1450972	25	GA071630-12LE9	58.87	10.57	13.63	2.52	38.07	69.29	58.70	8.35	127.70	67.77	18.82	2
1450973	26	GA04434-12LE28	59.72	10.27	26.11	2.37	32.60	67.71	59.30	8.05	105.90	67.21	17.85	2
1450974	27	GA04417-12E33	60.82	10.77	17.60	2.43	35.45	68.51	54.69	8.28	112.27	66.87	18.23	1
1450975	28	AR04002-3	58.28	10.93	14.32	2.40	33.67	69.16	59.64	8.16	105.85	65.93	18.54	4
1450976	29	AR04008-5	59.57	11.79	7.04	2.43	38.02	67.69	59.19	8.61	118.05	70.71	17.95	2
1450977	30	LA05145D-21	61.37	11.31	16.70	2.54	37.65	67.76	54.76	8.53	127.54	67.25	18.21	2
1450978	31	LA06027E-P7	60.96	11.07	25.99	2.21	32.14	68.38	53.55	8.70	136.79	66.06	17.40	2
1450979	32	08850-2	60.07	10.74	18.32	2.30	34.00	65.47	61.12	8.04	127.34	73.84	18.44	2
1450980	33	08577-4	59.70	9.87	11.32	2.32	33.68	69.14	61.70	7.28	91.51	67.19	18.16	5
		Mean	60.51	10.90	15.53	2.42	36.13	67.89	57.30	8.33	119.07	69.54	18.19	2.61
		Std Dev	1.09	0.45	5.76	0.15	3.42	1.17	2.72	0.37	12.23	2.73	0.31	1.32

Number of Standard Deviations Away from the Check

Lab Number	Entry Number	Entry	Test Weight (LB/BU)	Kernel Protein (at 12%)	Kernel Hardness (0-100)	Kernel Diameter (mm)	Kernel Weight (mg)	Flour Yield (%)	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Carbonate SRC (%)	Cookie Diameter (cm)	Top Grade (0-9)	Total T-Score
1450948	**1**	**AGS 2000**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.000**
1450949	2	USG 3555	-1.48	1.56	1.24	-0.34	-0.42	-2.32	-1.48	1.39	0.89	1.29	-1.72	-2.27	-1.754
1450950	3	Jamestown	0.37	1.23	1.17	-0.89	-2.21	-2.57	-0.09	0.30	1.20	0.99	-1.05	-2.27	-1.301
1450951	4	USG 3120	0.35	-0.48	0.68	0.41	0.57	-0.29	-0.61	-0.60	-0.44	-0.73	-1.98	-2.27	-0.077
1450952	5	KWS013	-0.85	-0.33	0.23	0.41	-0.78	-2.00	-0.92	0.19	0.77	0.10	-1.51	-2.27	-1.108
1450953	6	LA03200E-2	0.96	1.23	1.17	-3.95	0.90	-2.97	-0.26	1.04	0.36	2.06	-2.51	-1.51	-1.612
1450954	7	LA05130D-P5	0.22	0.66	0.81	0.34	0.85	-0.63	-1.93	0.38	1.30	0.73	-1.33	-0.76	-0.736
1450955	8	MD04W249-11-7	-0.12	0.75	1.66	-0.75	-0.55	-2.30	-0.88	0.71	-0.57	0.23	-0.94	-0.76	-1.282
1450956	9	NC09-20768	0.46	1.17	2.26	-1.91	-1.91	-2.86	-1.19	1.20	0.17	-0.47	-0.68	0.00	-1.386
1450957	10	NC09-20986	0.63	2.29	2.25	-1.29	-2.26	-3.14	-0.17	2.16	2.76	0.47	-3.52	-2.27	-1.507
1450958	11	NC09-22402	-0.07	1.21	3.65	-1.43	-2.04	0.08	-3.00	0.82	-0.24	-0.54	-1.81	-0.76	-0.684
1450959	12	NC8170-4-3	0.43	0.77	2.70	-1.77	-1.88	-0.47	-1.84	0.33	1.85	-1.67	-0.90	0.76	-0.334
1450960	13	VA10W-96	0.84	1.30	1.02	-1.57	-1.24	-2.15	-1.35	1.42	2.50	0.79	-1.00	-0.76	-1.197
1450961	14	VA11W-108	-1.21	0.22	0.77	-1.91	-1.65	-3.28	1.44	-1.06	0.90	0.88	-1.58	0.76	-1.528
1450962	15	VA11W-230	0.74	0.44	1.55	-1.57	-1.84	-2.27	-0.30	0.19	2.09	1.51	-1.54	-2.27	-1.298
1450963	16	VA11W-106	-1.37	-0.66	0.23	-1.09	-1.49	-2.59	0.71	-1.06	0.14	0.33	-0.32	-0.76	-1.223
1450964	17	TN1401	-1.11	0.99	-0.22	-2.32	-2.15	-1.64	0.43	0.27	0.78	-1.39	0.26	0.00	-0.459
1450965	18	KWS026	0.17	-0.24	1.48	-1.84	-2.25	-1.68	-0.48	-1.56	1.01	0.07	-0.35	0.76	-0.879
1450966	19	KWS027	-1.35	2.11	1.06	-1.63	-1.88	-0.79	-0.11	0.46	0.49	-1.83	0.04	-1.51	-0.275
1450967	20	OK11754WF	-2.05	0.95	0.19	0.75	0.04	-2.16	0.02	0.49	2.53	-0.63	-1.83	-0.76	-1.060
1450968	21	TXE21	-1.74	0.42	1.46	-0.82	-1.50	-1.38	-0.35	0.57	0.52	-0.22	-0.55	-1.51	-0.968
1450969	22	MDC07026-12-30	1.31	-0.51	3.10	-1.84	-2.25	-1.25	-0.78	-1.04	1.83	-0.66	-1.08	-0.76	-0.598
1450970	23	MD04W8-12-3	-0.26	2.71	0.72	-0.75	0.05	-2.06	-1.61	1.75	0.70	0.09	-2.04	-2.27	-1.192
1450971	24	GA03564-12E6	0.94	-0.24	1.76	0.34	0.08	-0.87	-1.58	-0.27	1.81	-0.13	-1.91	-0.76	-0.594
1450972	25	GA071630-12LE9	-1.88	-0.07	1.04	-0.41	-0.63	-0.46	-0.06	0.27	1.62	-0.79	0.78	-1.51	-0.420
1450973	26	GA04434-12LE28	-1.10	-0.73	3.21	-1.43	-2.23	-1.81	0.16	-0.55	-0.17	-1.00	-2.32	-1.51	-0.987
1450974	27	GA04417-12E33	-0.09	0.37	1.73	-1.02	-1.39	-1.13	-1.53	0.08	0.35	-1.12	-1.09	-2.27	-0.642
1450975	28	AR04002-3	-2.41	0.73	1.16	-1.23	-1.91	-0.57	0.29	-0.25	-0.17	-1.47	-0.11	0.00	-0.369
1450976	29	AR04008-5	-1.24	2.62	-0.10	-1.02	-0.64	-1.83	0.12	0.98	0.83	0.28	-2.02	-1.51	-0.945
1450977	30	LA05145D-21	0.41	1.56	1.57	-0.27	-0.75	-1.77	-1.51	0.76	1.60	-0.99	-1.17	-1.51	-0.834
1450978	31	LA06027E-P7	0.03	1.04	3.19	-2.52	-2.36	-1.24	-1.95	1.23	2.36	-1.42	-3.77	-1.51	-0.816
1450979	32	08850-2	-0.77	0.31	1.85	-1.91	-1.82	-3.72	0.83	-0.57	1.59	1.43	-0.43	-1.51	-1.953
1450980	33	08577-4	-1.11	-1.61	0.64	-1.77	-1.91	-0.59	1.04	-2.65	-1.34	-1.01	-1.32	0.76	-0.109

Total T-SCORE = Sum of (0.15 x TW), (-0.10*SKCS Kernel hardness), (0.4 x flour yield), (0.15x softness equivant) and (-0.2 x sodium carbonate SRC)

Ranking by Flour Yield T-Score

Lab Number	Entry Number	Entry	Flour Yield T-Score	Flour Yield T-Score Rank
1450958	11	NC09-22402	0.08	1
1450948	**1**	**AGS 2000**	**0.00**	**2**
1450951	4	USG 3120	-0.29	3
1450972	25	GA071630-12LE9	-0.46	4
1450959	12	NC8170-4-3	-0.47	5
1450975	28	AR04002-3	-0.57	6
1450980	33	08577-4	-0.59	7
1450954	7	LA05130D-P5	-0.63	8
1450966	19	KWS027	-0.79	9
1450971	24	GA03564-12E6	-0.87	10
1450974	27	GA04417-12E33	-1.13	11
1450978	31	LA06027E-P7	-1.24	12
1450969	22	MDC07026-12-30	-1.25	13
1450968	21	TXE21	-1.38	14
1450964	17	TN1401	-1.64	15
1450965	18	KWS026	-1.68	16
1450977	30	LA05145D-21	-1.77	17
1450973	26	GA04434-12LE28	-1.81	18
1450976	29	AR04008-5	-1.83	19
1450952	5	KWS013	-2.00	20
1450970	23	MD04W8-12-3	-2.06	21
1450960	13	VA10W-96	-2.15	22
1450967	20	OK11754WF	-2.16	23
1450962	15	VA11W-230	-2.27	24
1450955	8	MD04W249-11-7	-2.30	25
1450949	2	USG 3555	-2.32	26
1450950	3	Jamestown	-2.57	27
1450963	16	VA11W-106	-2.59	28
1450956	9	NC09-20768	-2.86	29
1450953	6	LA03200E-2	-2.97	30
1450957	10	NC09-20986	-3.14	31
1450961	14	VA11W-108	-3.28	32
1450979	32	08850-2	-3.72	33

Ranking by Total T-Score

Lab Number	Entry Number	Entry	Total T-Score	Total T-Score Rank
1450948	**1**	**AGS 2000**	**0.000**	**1**
1450951	4	USG 3120	-0.077	2
1450980	33	08577-4	-0.109	3
1450966	19	KWS027	-0.275	4
1450959	12	NC8170-4	-0.334	5
1450975	28	AR04002-	-0.369	6
1450972	25	GA07163	-0.420	7
1450964	17	TN1401	-0.459	8
1450971	24	GA03564-	-0.594	9
1450969	22	MDC0702	-0.598	10
1450974	27	GA04417-	-0.642	11
1450958	11	NC09-224	-0.684	12
1450954	7	LA05130D	-0.736	13
1450978	31	LA06027E	-0.816	14
1450977	30	LA05145D	-0.834	15
1450965	18	KWS026	-0.879	16
1450976	29	AR04008-	-0.945	17
1450968	21	TXE21	-0.968	18
1450973	26	GA04434-	-0.987	19
1450967	20	OK11754	-1.060	20
1450952	5	KWS013	-1.108	21
1450970	23	MD04W8-	-1.192	22
1450960	13	VA10W-9	-1.197	23
1450963	16	VA11W-1	-1.223	24
1450955	8	MD04W2	-1.282	25
1450962	15	VA11W-2	-1.298	26
1450950	3	Jamestow	-1.301	27
1450956	9	NC09-207	-1.386	28
1450957	10	NC09-209	-1.507	29
1450961	14	VA11W-1	-1.528	30
1450953	6	LA03200E	-1.612	31
1450949	2	USG 3555	-1.754	32
1450979	32	08850-2	-1.953	33

Flour Yield Grade (Based on +5000 Samples Between 2008 and 2013)

Grade	Range	Percent
A	>71.55	15
B	70.43 to 71.54	20
C	69.10 to 70.42	30
D	67.94 to 69.11	20
F	<67.93	15

Lab Number	Entry Number	Entry	Flour Yield (%)	Flour Yield % Grade
1450948	**1**	**AGS 2000**	**69.83**	**C**
1450949	2	USG 3555	67.12	F
1450950	3	Jamestown	66.82	F
1450951	4	USG 3120	69.49	C
1450952	5	KWS013	67.49	F
1450953	6	LA03200E-2	66.35	F
1450954	7	LA05130D-P5	69.10	D
1450955	8	MD04W249-11-7	67.14	F
1450956	9	NC09-20768	66.48	F
1450957	10	NC09-20986	66.15	F
1450958	11	NC09-22402	69.93	C
1450959	12	NC8170-4-3	69.28	C
1450960	13	VA10W-96	67.32	F
1450961	14	VA11W-108	66.00	F
1450962	15	VA11W-230	67.17	F
1450963	16	VA11W-106	66.80	F
1450964	17	TN1401	67.91	F
1450965	18	KWS026	67.87	F
1450966	19	KWS027	68.90	D
1450967	20	OK11754WF	67.30	F
1450968	21	TXE21	68.22	D
1450969	22	MDC07026-12-30	68.37	D
1450970	23	MD04W8-12-3	67.43	F
1450971	24	GA03564-12E6	68.81	D
1450972	25	GA071630-12LE9	69.29	C
1450973	26	GA04434-12LE28	67.71	F
1450974	27	GA04417-12E33	68.51	D
1450975	28	AR04002-3	69.16	C
1450976	29	AR04008-5	67.69	F
1450977	30	LA05145D-21	67.76	F
1450978	31	LA06027E-P7	68.38	D
1450979	32	08850-2	65.47	F
1450980	33	08577-4	69.14	C

Rankings/Grade Summary

Lab Number	Entry Number	Entry	Flour Yield T-Score	Yield T-Score Rank	Total T-Score	Total T-Score Rank	Flour Yield % Grade
1450948	**1**	**AGS 2000**	**0.00**	**2**	**0.000**	**1**	**C**
1450949	2	USG 3555	-2.32	26	-1.754	32	F
1450950	3	Jamestow	-2.57	27	-1.301	27	F
1450951	4	USG 3120	-0.29	3	-0.077	2	C
1450952	5	KWS013	-2.00	20	-1.108	21	F
1450953	6	LA03200E	-2.97	30	-1.612	31	F
1450954	7	LA05130D	-0.63	8	-0.736	13	D
1450955	8	MD04W24	-2.30	25	-1.282	25	F
1450956	9	NC09-207	-2.86	29	-1.386	28	F
1450957	10	NC09-209	-3.14	31	-1.507	29	F
1450958	11	NC09-224	0.08	1	-0.684	12	C
1450959	12	NC8170-4	-0.47	5	-0.334	5	C
1450960	13	VA10W-96	-2.15	22	-1.197	23	F
1450961	14	VA11W-10	-3.28	32	-1.528	30	F
1450962	15	VA11W-23	-2.27	24	-1.298	26	F
1450963	16	VA11W-10	-2.59	28	-1.223	24	F
1450964	17	TN1401	-1.64	15	-0.459	8	F
1450965	18	KWS026	-1.68	16	-0.879	16	F
1450966	19	KWS027	-0.79	9	-0.275	4	D
1450967	20	OK11754W	-2.16	23	-1.060	20	F
1450968	21	TXE21	-1.38	14	-0.968	18	D
1450969	22	MDC0702	-1.25	13	-0.598	10	D
1450970	23	MD04W8-	-2.06	21	-1.192	22	F
1450971	24	GA03564-	-0.87	10	-0.594	9	D
1450972	25	GA071630	-0.46	4	-0.420	7	C
1450973	26	GA04434-	-1.81	18	-0.987	19	F
1450974	27	GA04417-	-1.13	11	-0.642	11	D
1450975	28	AR04002-	-0.57	6	-0.369	6	C
1450976	29	AR04008-	-1.83	19	-0.945	17	F
1450977	30	LA05145D	-1.77	17	-0.834	15	F
1450978	31	LA06027E	-1.24	12	-0.816	14	D
1450979	32	08850-2	-3.72	33	-1.953	33	F
1450980	33	08577-4	-0.59	7	-0.109	3	C