

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

State Agricultural Experiment Stations, Cooperating

2003 - 2004

**UNIFORM SOUTHERN SOFT RED WINTER WHEAT
NURSERY**

Report

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This is a joint progress report of cooperative investigations underway in the State Agricultural Experiment Stations and the Agricultural Research Service of the U.S. Department of Agriculture containing preliminary data which have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool for the use of the cooperators and their official staff and those persons having direct and special interest in the development of agricultural research programs.

This report includes data furnished by the State Agricultural Experiment Stations. The report is not intended for publication and should not be referred to in literature citations nor quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

USDA-ARS
National Small Grains Germplasm Research Facility
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November, 2004

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**2003-2004 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 3209	Saluda/4/Massey*2/3/Massey*3/Balkan//Saluda (formerly VA94-54-479)	Check	95-96
3	Pioneer 26R61	Omega78/S76/4/Arthur71/3/Stadler//Redcoat/Wisc1/5/Coker747/6/2555sib (formerly XW663)	Check	97-98
4	McCormick	VA92-51-39 (IN71761A4-31-5-48//VA7154-147/McNair1813)/AL870365 (Coker747*2/Amigo) (formerly VA98W-591)	Check	00-01
5	AR910-9-1	AR369-4-2/Bayles	Bacon	01-02
6	NC99-13022	W275126/Madison//FL85363/CL850643/3/GA8610-D6	Murphy	02-03
7	VA00W-526	FFR555W/VA91-54-343(IN71761A4-31-5-48//71-54-147/MCN1813)//GA8619/D25(MCN1003/CK797/3/Hunter//Veery/Amigo)	Griffey	02-03
8	VA98W-335	CK983//GA-Andy/VA90-21-20(79IWWRN67//CK65-20/ATR)	Griffey	02-03
9	VAN98W-342	CK983//GA-Andy/VA90-21-20(79IWWRN67//CK65-20/ATR)	Griffey	02-03
10	VA98W-631	VA92-52-11(A55-2//AXM/9*CC/3/Pio2550)/VA92-52-52(Adria/2*Sal)	Griffey	02-03
11	LA9560CA22-1	FL302/FR81-19(GA85430-D17-2-P1)//CK9663	Harrison	02-03
12	AR93035-4-1	Pio2548/4549-W2-1	Bacon	02-03
13	SC980890	SC861562/VA66-54-6/VA66-54-10//Coker?/3/82104B1-3-2(H14H15)/5/GA81126{	Edge	02-03
14	B980582	L881060/L880436	Hancock	02-03
15	B980696	L880421/Boranjka	Hancock	02-03
16	B980416	Coker9543/ABI85-81	Hancock	02-03
17	MD71-5	CK983//GA-Andy/VA90-21-20(79IWWRN67//CK65-20/ATR)	Costa	02-03
18	TX00D1626	TX89D9615/L870537	Sutton	02-03
19	TN04-01	Jackson/Dozier	West	03-04
20	AW D00-6383	Pio2545/3/Choti Lerma/Funk5215//Arthur71	Fogleman	03-04
21	AW D00*6874	IL77-2656/NK79W810//Pio2580	Fogleman	03-04
22	AW D00*6847	Jackson/Pio2545	Fogleman	03-04
23	NC00-15332	Morey/Pio2580	Murphy	03-04
24	NC00-15385	NC96BGTA5/VA93-52-55	Murphy	03-04
25	NC00-15389	GA85240-6/NC96BGTA5	Murphy	03-04
26	MD 11-52	Coker9803/Freedom	Costa	03-04
27	MV 5-46	71-54-147/CK68-15//IN65309C7-18-2-3-2/FFR555W//MSY*3/Balkan//Sal	Costa	03-04
28	LA9585D17-2	LEN/NEB//FL302/3/Pio2551(male sterile)/4/CK9835/CEP8236	Harrison	03-04
29	LA925C104-1-3-B-4	CK9134/SNBRDSIB//CK9835	Harrison	03-04
30	B980006	L880102/PT88-32	Hancock	03-04
31	G/F 951208-2E35	Roberts/4/Pio2580//T83103*2 Ham/3/Flemming	Johnson	03-04
32	G/F 951079-2E31	GA881130/Gore	Johnson	03-04
33	G/F 95652-2E56	Coker9134//85410*2/FFR518	Johnson	03-04
34	F/G 95195	SWN6828-6AP/Coker9766//Mason/3/Morey sib	Barnett	03-04
35	F/G 951216-2E14	GA87110*2/T8724	Barnett	03-04
36	F/G 951216-2E26	GA87110*2/T8724	Barnett	03-04
37	SC996284	VA85-24/IN82104B1-3-2/5/SC828351/SC859056/SC859075//IN841453/3/KSH1127/4/IN8268G1-19-4/6/Coker9835	Edge	03-04
38	SC996289	VA85-24/IN82104B1-3-2/5/SC828351/SC859056/SC859075//IN841453/3/KSH1127/4/IN8268G1-19-4/6/Coker9835	Edge	03-04
39	G39015	IL84-3010/T812	Brown	03-04
40	G39033	C916/Clark	Brown	03-04
41	P92226E2-5-3-2	86982C2-11/844030H1-2//86350RA1-14/831800A1-7	Ohm	03-04
42	P961341A3-2-2	9017C1-1//92823A1-2/9218B4-4/3/P107/4/Patterson	Ohm	03-04

LOCATION NOTES

Belle Mina, Alabama

Cooperators: Kathryn M. Glass
Auburn University
Planted: October 21, 2003
Harvested: June 17 & 21, 2004

Bay, Arkansas

Cooperators: June Hancock, David Hill, Richard Gray
Syngenta Seeds
Planted: October 23, 2003
Harvested: June 10, 2004
Comments: Very mild winter. Rain at flowering. Leaf rust moved in late, but we did get good notes.

DeWitt, Arkansas

Cooperators: Barton Fogleman, Michael Montgomery, Chris DeArmond
AgriPro Wheat
Planted: October 18, 2003
Fertilizer: June 3, 2004

Stuttgart, Arkansas

Cooperators: Robert Bacon, John Kelly, Charlie Parsons
University of Arkansas
Planted: October 17, 2003
Harvested: June 2, 2004
Fertilizer: 100 N

Clay Co., Jackson Co. Fayetteville, Keiser, Kibler, Arkansas

Cooperators: Gene Milus
University of Arkansas
Comments: Fayetteville: The stripe rust nursery was inoculated with a field collection from Stuttgart, AR in 2000 (virulence on Yr9 and representative of what was present then). Clay County: 0-9 scale, values of 3 or higher were susceptible. Keiser: 0-9 scale, values of 6.5 or higher were susceptible. Jackson County: 0-9 scale, values of 4 or higher were susceptible. Kibler: Rated at soft dough stage on 5/7, diseases in order of prevalence were Septoria leaf blotch, stripe rust, and leaf rust.

Georgetown, Delaware

Cooperators: Bob Uniatowski

Planted: University of Delaware
Harvested: October 21, 2003
Fertilizer: June 21, 2004
100 N

Quincy, Florida

Cooperators: Ronald D. Barnett, Lloyd Schell
University of Florida
Planted: November 17, 2003
Fertilizer: 75-50-75
Comments: Good test. Dry spring. Diseases were not a factor in yield.

Griffin, Georgia

Cooperators: Jerry W. Johnson, D. Bland, S. Sutton, J. Youmans
University of Georgia
Harvested: May 27, 2004

Plains, Georgia

Cooperators: Jerry W. Johnson, D. Bland, S. Sutton, J. Youmans
University of Georgia
Planted: November 12, 2003
Harvested: May 24, 2004
Fertilizer: 80 N

Aberdeen, Idaho

Cooperators: Charles Erickson, Scott McNeil, Harold Bockelman
USDA-ARS, National Small Grains Collection
Planted: September 18, 2003
Harvested: July 21, 2004
Comments: Plant heights were not taken due to high variability, also reflected in the CV.

Evansville, Indiana

Cooperators: Herbert W. Ohm
Purdue University
Planted: October 13, 2003
Fertilizer: 36-92-100 fall; 95-0-0 spring
Comments: Plots not harvested due to a severe rain and wind storm on May 25 caused severe lodging. Another severe rain storm on June 8. Rained out with 2" rains in attempting harvest on June 12 and 14.

Ft. Branch, Indiana

Cooperators: Benjamin Moreno, Justin Cooley
Westbred LLC
Comments: Nursery was lost due to excessive rain and severe lodging.

Greensburg, Indiana

Cooperators: Sam Brown
Genesis Seed Research
Planted: October 7, 2003
Harvested: June 25, 2004
Fertilizer: 28-46-32 fall; 80-0-0 spring
Comments: Good stand establishment, exposed plots during winter cold, abnormally moist March, warm dry April, moist and normal May temperatures. Harvested a week earlier than usual. Little to no foliar diseases, however Fusarium HB took a toll. FHB index = percent of heads showing symptoms 1 = 0 to 10, 2 = 11 to 20, 3 = 21 to 30, 4 = 31 to 40, 5 = 41 to 50% or more. ** winter kill note = not sure what happened here because same entry in the Eastern nursery looked fine.

Lafayette, Indiana

Cooperators: Benjamin Moreno, Justin Cooley
Westbred LLC
Planted: October 5, 2003
Harvested: June 24, 2004
Comments: One rep test. Heavy scab and lodging pressure due to continuous rain at flowering and early dough stage. Dry weather by harvest time, so yield and TW were decent.

West Lafayette, Indiana

Cooperators: Sue Cambron
USDA-ARS Crop Production & Pest Control Research
Comments: Provided the Hessian fly data. Number of plants R vs number of plants S.

Winfield, Kansas

Cooperators: Sid Perry
Westbred LLC
Comments: Nursery was lost to an early hailstorm.

Logan Co., Kentucky

Cooperators: David Van Sanford
University of Kentucky
Planted: October 16, 2003
Harvested: June 16, 2004
Fertilizer: P,K according to soil test; 60 N at GS3; 50 N at GS5
Comments: Lots of rain in May.

Woodford Co., Kentucky

Cooperators: David Van Sanford
University of Kentucky
Planted: October 21, 2003
Harvested: June 30, 2004
Fertilizer: P,K according to soil test; 60 N at GS3; 50 N at GS5
Comments: Lots of rain in May. Heavy scab pressure. FDK and mildew data should be good.

Baton Rouge, Louisiana

Cooperators: Stephen A. Harrison, Kelly Arceneaux, Fred Lareaux
Louisiana State University
Planted: November 23, 2003
Fertilizer: 90-0-0
Comments: Nursery lost to rains and sprouting. Very wet February (about 13" rain). Very dry March through mid-April. 18" rain March 24 through June 6. Severe sprouting and lodging, so no yield data. Light disease pressure.

Queenstown, Maryland

Cooperators: Jose Costa, Aaron Cooper
University of Maryland
Planted: October 14, 2003
Harvested: June 16, 2004
Fertilizer: 100 N

St. Paul, Minnesota

Cooperators: Dave Long, James Kolmer
USDA-ARS Cereal Disease Laboratory
Comments: Seedling reaction to leaf rust. No field/adult plant data for leaf rust and stem rust were available due to severe winterkill.

Portageville, Missouri

Cooperators: Anne L. McKendry, David Tague
University of Missouri
Planted: November 6, 2003
Harvested: June 24, 2004
Fertilizer: 40 N fall; 80 N spring

Cleveland, Mississippi

Cooperators: Barton Fogleman, Michael Montgomery, Chris DeArmond
AgriPro Wheat
Planted: October 17, 2003
Harvested: June 5, 2004
Comments: Unable to rate leaf rust for entries with stripe rust ratings of 5 or higher.

Newton, Mississippi

Cooperators:

Bernie White
Mississippi State University

Lincoln, Nebraska

Cooperators:

Robert A. Graybosch
USDA-ARS Wheat, Sorghum, and Forage Research Unit
Comments: Provided the 1RS data.

Kinston, North Carolina

Cooperators:

Paul Murphy, Rene Navarro
North Carolina State University

Planted:

October 20, 2003

Harvested:

June 2, 2004

Fertilizer:

130 N

Comments:

Growing conditions during fall and winter were favorable. Powdery mildew came in late and should have had little effect on yield. Mean temperatures during May were an all-time NC record. Moisture was relatively sparse during that time period, also. These factors probably contributed to the poor test weights.

Raleigh, North Carolina

Cooperators:

David Marshall
USDA-ARS Plant Science Research

Comments:

Provided PM seedling data.

Wooster, Ohio

Cooperators:

Clay Sneller
Ohio State University, OARDC

Wooster, Ohio

Cooperators:

Charles Gaines
USDA-ARS Soft Wheat Quality Lab

Comments:

Provided the nursery quality data.

Enid, Oklahoma

Cooperators:

Brett Carver, Ella Vogle
Oklahoma State University

Comments:

The standard cultivar used to determine acid-soil tolerance was 2163, with an assigned rating of 2 on a scale of 1 (tolerant) to 5 (highly susceptible). Readings taken at Enid, OK (new location in 2004, pH = 4.6, 70 ppm Al, and Al saturation = 11%) on the date indicated.

Florence, South Carolina

Cooperators: Benjamin Edge
Clemson University
Planted: November 25, 2003
Harvested: June 10, 2004
Fertilizer: 30-98-73 preplant; 65 N topdress
Comments: Somewhat wet after planting. Cool winter. Dry at boot and heading (driest March on record). Low disease pressure.

Knoxville, Tennessee

Cooperators: Dennis West
University of Tennessee
Planted: October 28, 2003
Harvested: June 9, 2004
Fertilizer: 30-30-30 fall; 60-0-0 spring

Prosper, Texas

Cooperators: Russell Sutton
Texas A&M University

Blacksburg, Virginia

Cooperators: Carl Griffey, T. Pridgen, Joe Paling
Virginia Tech
Planted: October 9, 2003
Harvested: June 28, 2004
Fertilizer: 25-60-100 on 10/7; 60-0-0 on 4/7
Comments: 1 Belgian Lodging = Area x Intensity x 0.2. Area is rated on a scale from 1 (plot unaffected) to 10 (entire plot affected). Intensity is rated on a scale from 1 (plants standing upright) to 5 (plants lying flat on the ground). In three separate greenhouse experiments, wheat lines were inoculated at the two-leaf seedling stage using two races of leaf rust (TNRJ with virulence for resistance genes Lr1, 2a, 2c, 3a, 3ka, 9, 10, 11, 14a, 24, 30 and MCRK with virulence for genes Lr1, 3a, 3ka, 10, 11, 14a, 18, 26, 30) and a field composite of powdery mildew with virulence for resistance genes Pm2, 3a, 3c, 3f, 4a, 4b, 5, 6, 7, 8). Observed reactions of leaf rust differentials with genes Lr18 and 26 to race MCRK were only moderately susceptible. Observed reactions of powdery mildew differentials with genes Pm2, 5, 8 gave intermediate to moderately susceptible reactions. For powdery mildew differentials, two sets of differentials (the standard Chancellor set and an experimental Coker 68-15 set) were used in some cases, but there were discrepancies [Pm7, 17

(Amigo)] between the two sets in a few cases in which Coker 68-15 differentials did not give the expected reaction type. The Coker 68-15 differential set used in these tests is not a final set. Also, in some cases where treated seed was sent, the reaction types may not be reflective of genetic resistance. Infection type for leaf rust was rated on a 0-3 (0-2 = resistant and 3=susceptible) scale and for powdery mildew on a 0-4 (0-2 = resistant, 3 = moderately susceptible, and 4 = susceptible). Where indicated reaction types R=resistant, MR=moderately resistant, I=Intermediate, MS=moderately susceptible, and S=susceptible. Reaction types of heterogeneous lines are noted with the predominant disease score listed preceding the slash. For example a disease score of 12MR/TRS, indicates that most plants were scored as 12MR and a Trace (TR) number of plants were scored as S. Disease score having "C" indicates Chlorosis was observed and "N" indicates Necrosis.

Warsaw, Virginia

Cooperators:

Carl Griffey, T. Pridgen, Joe Paling
Virginia Tech

Planted:

October 19, 2003

Harvested:

June 14, 2004

Fertilizer:

30-60-60-5S on 10/17; 25# of 15-0-0 on 12/21 and 2/17;
60# of 24-0-0-3S on 3/30

Comments:

1 Belgian Lodging = Area x Intensity x 0.2. Area is rated on a scale from 1 (plot unaffected) to 10 (entire plot affected). Intensity is rated on a scale from 1 (plants standing upright) to 5 (plants lying flat on the ground).

Mt. Vernon, Pullman, Washington

Cooperators:

Xianming Chen
USDA-ARS Wheat Genetics, Quality, Physiology &
Disease Research

Comments:

Provided adult stripe rust data.

YIELD (bu/acre)

		Belle Mina AL		Bay AR		DeWitt AR		Stuttgart AR		Georgetown DE		Quincy FL	
		a	rank	ab	rank	ab	rank	a	rank	ab	rank	a	rank
1	AGS 2000	89.2	2	70.9	18	118.6	3	81.0	12	64.5	6	85.9	11
2	USG 3209	86.4	6	71.5	15	110.4	13	67.0	41	51.3	33	85.9	11
3	Pioneer 26R61	77.4	39	71.8	14	108.9	16	70.1	37	62.4	10	77.6	28
4	McCormick	86.8	4	72.2	12	86.9	40	70.1	37	77.0	1	83.9	16
5	AR910-9-1	80.0	25	59.3	37	108.1	17	89.0	2	62.8	9	87.6	9
6	NC99-13022	78.5	33	70.0	22	116.1	5	76.3	27	62.0	11	79.6	23
7	VA00W-526	84.7	8	66.5	25	101.7	25	80.3	15	70.0	3	88.4	7
8	VA98W-335	84.1	9	70.6	20	79.0	42	79.6	17	54.6	28	69.1	40
9	VAN98W-342	77.6	37	67.1	24	106.2	20	79.2	19	55.5	26	75.6	31
10	VA98W-631	80.2	23	63.4	30	100.9	27	81.5	11	59.4	18	82.1	17
11	LA9560CA22-1	86.5	5	69.3	23	112.2	9	77.1	24	59.4	18	75.2	34
12	AR93035-4-1	80.0	25	75.0	6	109.2	15	79.9	16	60.7	15	75.5	33
13	SC980890	71.9	40	54.8	41	87.2	39	72.6	33	45.6	39	81.5	19
14	B980582	82.5	15	77.4	3	97.7	30	76.5	26	59.8	17	89.6	6
15	B980696	77.6	37	65.5	27	104.9	21	79.4	18	56.4	24	67.2	41
16	B980416	80.7	20	72.4	10	93.4	34	84.6	6	61.5	13	84.9	14
17	MD71-5	77.9	36	59.2	38	93.5	33	74.8	30	61.5	13	80.8	20
18	TX00D1626	82.6	13	61.6	34	116.6	4	83.2	8	52.5	31	72.8	36
19	TN04-01	83.6	10	76.5	4	94.1	32	78.2	22	62.0	11	79.6	23
20	AW D00-6383	80.1	24	56.6	40	114.9	7	78.9	20	58.5	20	74.2	35
21	AW D00*6874	79.5	28	73.6	7	115.9	6	85.4	5	55.1	27	87.0	10
22	AW D00*6847	80.6	21	63.8	29	99.6	29	82.5	10	64.1	8	79.8	21
23	NC00-15332	85.8	7	66.2	26	95.3	31	89.0	2	57.7	21	94.0	2
24	NC00-15385	88.5	3	75.7	5	114.7	8	71.0	36	54.6	28	88.0	8
25	NC00-15389	83.6	10	78.3	2	110.0	14	75.0	29	48.6	36	90.5	5
26	MD 11-52	82.7	12	70.4	21	103.4	22	77.1	24	51.6	32	78.2	27
27	MV 5-46	93.5	1	81.8	1	124.5	1	76.3	27	67.1	4	95.0	1
28	LA9585D17-2	78.1	35	70.9	17	119.3	2	55.5	42	57.7	21	64.8	42
29	LA925C104-1-3-B-4	82.6	13	62.3	32	84.8	41	69.8	39	49.9	35	79.7	22
30	B980006	67.8	42	62.8	31	111.1	12	72.5	34	60.7	15	84.9	14
31	G/F 951208-2E35	79.9	27	72.3	11	92.1	35	80.7	13	45.2	40	79.2	25
32	G/F 951079-2E31	82.4	17	60.7	36	87.4	38	72.9	31	42.2	42	78.4	26
33	G/F 95652-2E56	80.6	21	60.9	35	107.9	18	72.2	35	57.7	21	91.1	3
34	F/G 95195	78.3	34	72.8	8	107.8	19	67.5	40	46.0	37	85.7	13
35	F/G 951216-2E14	79.4	29	58.4	39	92.1	36	80.7	13	44.3	41	71.5	38
36	F/G 951216-2E26	82.2	18	70.6	19	111.9	11	72.8	32	50.3	34	72.8	36
37	SC996284	78.7	32	72.1	13	102.9	23	84.3	7	64.5	6	77.4	29
38	SC996289	82.5	15	70.9	16	100.3	28	78.1	23	54.6	28	90.7	4
39	G39015	79.0	31	64.4	28	112.2	10	89.7	1	71.4	2	71.2	39
40	G39033	79.1	30	61.6	33	101.1	26	86.1	4	65.0	5	76.8	30
41	P92226E2-5-3-2	81.4	19	52.5	42	102.3	24	82.9	9	46.0	37	81.9	18
42	P961341A3-2-2	69.2	41	72.6	9	88.8	37	78.4	21	56.4	24	75.6	31
LOCATION MEANS		81.0		67.8		103.5		77.6		57.3		80.7	
LSD (.05)				7.7		13.2		12.9		9.2		15.9	
CV %				7		7.6		10.2		9.8		12.1	
REPS		3		3		2		3		3		3	
Harvest Plot Area (sq.ft.)		80		61.06		45.5		70		62.5		55	

YIELD (bu/acre)

		Griffin GA		Plains GA		Aberdeen ID		Greensburg IN		Lafayette IN		Logan Co. KY	
		ab	rank	a	rank		rank		rank		rank	ab	rank
1	AGS 2000	100.7	1	76.9	10	106.4	18	68.2	33	86.3	32	94.8	4
2	USG 3209	98.9	2	75.1	13	108.3	15	71.3	32	96.7	16	76.5	29
3	Pioneer 26R61	80.5	33	71.7	23	107.7	17	41.9	41	79.0	38	84.5	15
4	McCormick	92.5	6	66.6	36	118.2	5	84.9	19	98.8	10	61.9	41
5	AR910-9-1	84.4	23	69.2	31	114.1	8	96.2	8	77.4	40	79.1	24
6	NC99-13022	68.2	42	74.8	16	95.3	33	55.4	39	83.7	35	79.6	21
7	VA00W-526	83.1	28	77.8	7	109.7	12	83.3	22	100.8	7	79.3	23
8	VA98W-335	86.5	16	62.2	40	101.9	22	89.7	15	99.6	8	79.1	24
9	VAN98W-342	79.6	35	67.0	35	104.6	20	95.8	9	97.3	14	75.1	32
10	VA98W-631	90.4	8	72.1	21	109.7	12	55.5	38	83.8	34	76.4	30
11	LA9560CA22-1	85.8	18	68.0	33	119.4	3	73.1	30	88.5	30	87.2	12
12	AR93035-4-1	86.8	15	70.5	25	109.1	14	86.0	18	96.9	15	71.9	36
13	SC980890	84.0	25	64.0	39	98.6	26	67.9	34	83.3	36	44.9	42
14	B980582	82.0	31	61.5	41	95.3	32	97.2	7	90.6	25	77.4	27
15	B980696	80.1	34	67.4	34	121.8	1	106.3	4	103.5	4	89.9	6
16	B980416	87.1	14	78.1	6	112.7	9	92.6	14	96.5	17	76.4	30
17	MD71-5	74.4	40	73.1	18	85.8	40	95.1	10	95.4	20	76.6	28
18	TX00D1626	86.3	17	71.4	24	96.4	28	109.9	2	95.9	19	84.5	15
19	TN04-01	77.2	39	70.2	28	99.0	24	79.9	27	98.2	12	83.0	17
20	AW D00-6383	90.1	9	83.7	1	89.8	37	84.7	20	106.7	2	90.7	5
21	AW D00*6874	89.3	11	73.4	17	95.5	31	107.6	3	101.4	6	80.7	19
22	AW D00*6847	91.1	7	70.4	26	101.4	23	86.5	17	95.0	21	87.7	10
23	NC00-15332	96.1	3	72.8	19	118.8	4	84.4	21	103.2	5	79.8	20
24	NC00-15385	93.5	5	71.9	22	120.4	2	83.0	24	94.6	22	78.5	26
25	NC00-15389	87.8	13	79.6	3	87.5	38	93.0	12	93.2	24	87.3	11
26	MD 11-52	73.9	41	72.3	20	79.5	42	56.1	37	90.3	27	88.7	9
27	MV 5-46	95.1	4	78.6	5	86.5	39	65.2	35	105.8	3	89.9	6
28	LA9585D17-2	77.6	38	77.3	9	96.4	29	92.8	13	60.3	41	68.2	38
29	LA925C104-1-3-B-4	82.8	29	70.2	28	90.8	36	101.9	6	88.4	31	67.9	39
30	B980006	83.5	27	68.7	32	105.8	19	26.7	42	106.9	1	86.0	13
31	G/F 951208-2E35	81.9	32	70.3	27	116.6	6	71.5	31	78.9	39	74.3	33
32	G/F 951079-2E31	85.0	20	76.0	12	81.0	41	111.0	1	82.0	37	66.5	40
33	G/F 95652-2E56	83.8	26	83.6	2	98.8	25	83.1	23	95.9	18	68.7	37
34	F/G 95195	84.1	24	70.2	28	111.9	10	75.1	28	97.5	13	79.4	22
35	F/G 951216-2E14	78.8	36	76.7	11	108.2	16	44.6	40	88.7	29	82.7	18
36	F/G 951216-2E26	84.8	21	77.7	8	114.5	7	80.2	26	84.8	33	72.9	35
37	SC996284	85.4	19	79.0	4	97.7	27	81.9	25	98.3	11	102.6	1
38	SC996289	82.6	30	75.1	13	111.2	11	62.6	36	99.1	9	73.5	34
39	G39015	88.2	12	64.5	38	102.7	21	74.7	29	90.4	26	89.0	8
40	G39033	84.5	22	75.1	13	93.0	35	89.3	16	93.2	23	85.4	14
41	P92226E2-5-3-2	89.7	10	60.7	42	94.2	34	105.0	5	56.2	42	100.0	2
42	P961341A3-2-2	77.7	37	65.8	37	95.9	30	94.7	11	89.0	28	95.5	3
LOCATION MEANS		85.1		72.2		102.7		81.1		91.7		80.3	
LSD (.05)		12.9		15		29.39						13.2	
CV %		7.5		10.2		20.85						9.8	
REPS		3		2		4		1		1		2	
Harvest Plot Area (sq.ft.)		55		50		21.77		32		45		40	

YIELD (bu/acre)

		Woodford Co. KY		Queenstown MD		Portageville MO		Cleveland MS		Newton MS		Kinston NC	
		a	rank	ab	rank	ab	rank	a	rank	a	rank	ab	rank
1	AGS 2000	65.2	23	55.8	30	47.0	35	67.3	28	103.0	24	73.4	13
2	USG 3209	67.5	15	61.2	15	48.5	26	92.0	9	112.1	14	67.5	28
3	Pioneer 26R61	62.3	29	50.2	41	52.0	17	114.8	2	92.8	34	63.6	36
4	McCormick	67.0	18	63.6	7	45.8	38	59.2	33	112.7	12	72.2	15
5	AR910-9-1	61.6	32	57.0	24	52.8	15	88.5	11	106.9	20	69.0	24
6	NC99-13022	50.3	38	53.4	36	48.5	26	93.5	7	109.8	17	64.2	34
7	VA00W-526	46.6	40	62.9	8	49.5	23	95.7	6	109.7	18	73.2	14
8	VA98W-335	49.6	39	62.2	11	46.2	36	45.7	39	96.5	31	73.5	12
9	VAN98W-342	79.7	2	57.9	20	55.6	7	42.8	40	100.9	28	76.0	10
10	VA98W-631	70.9	13	54.2	35	46.0	37	80.8	19	113.0	11	77.8	9
11	LA9560CA22-1	76.7	7	51.8	39	50.6	20	115.2	1	84.1	39	82.9	1
12	AR93035-4-1	60.1	33	56.8	27	51.9	18	81.9	18	86.9	38	65.9	33
13	SC980890	59.0	35	55.7	31	47.4	31	67.6	27	89.0	37	63.0	38
14	B980582	67.7	14	60.4	17	62.3	2	80.2	20	105.8	21	70.0	20
15	B980696	75.1	10	56.9	25	54.0	12	78.7	22	54.3	42	67.5	27
16	B980416	63.8	27	66.9	3	56.9	4	61.7	31	82.6	40	82.0	4
17	MD71-5	79.5	3	57.2	22	56.2	6	33.5	42	90.0	35	70.9	17
18	TX00D1626	66.7	19	52.5	37	48.3	28	48.9	38	97.2	30	67.0	29
19	TN04-01	64.2	26	56.2	28	48.9	24	61.4	32	94.7	32	82.6	2
20	AW D00-6383	65.5	21	67.2	2	47.2	34	41.1	41	93.8	33	72.1	16
21	AW D00*6874	82.3	1	58.4	19	50.6	20	97.0	4	116.3	6	82.3	3
22	AW D00*6847	62.0	30	62.6	10	44.1	40	65.7	30	114.6	9	78.2	7
23	NC00-15332	72.9	11	55.3	32	47.4	31	86.4	14	125.1	2	78.0	8
24	NC00-15385	77.1	6	61.9	12	55.6	7	76.8	23	110.4	16	68.1	26
25	NC00-15389	63.0	28	59.4	18	54.0	12	74.6	25	103.4	23	70.4	18
26	MD 11-52	66.2	20	54.7	34	51.7	19	66.0	29	124.7	3	69.6	22
27	MV 5-46	76.0	8	61.9	13	54.7	9	57.8	34	126.0	1	70.0	21
28	LA9585D17-2	65.4	22	51.2	40	48.1	29	55.1	35	101.5	27	64.2	35
29	LA925C104-1-3-B-4	59.6	34	46.8	42	54.4	10	53.2	37	105.0	22	63.0	37
30	B980006	44.0	42	56.0	29	45.8	38	100.5	3	99.7	29	66.0	32
31	G/F 951208-2E35	44.2	41	66.4	4	49.6	22	88.1	13	119.9	4	60.1	41
32	G/F 951079-2E31	64.8	25	61.6	14	47.9	30	79.7	21	109.7	19	66.9	30
33	G/F 95652-2E56	67.5	15	56.9	26	41.6	42	96.6	5	116.7	5	62.6	39
34	F/G 95195	67.3	17	61.1	16	52.8	15	72.9	26	113.0	10	66.1	31
35	F/G 951216-2E14	75.9	9	54.8	33	47.3	33	83.8	16	110.9	15	75.2	11
36	F/G 951216-2E26	53.1	37	52.4	38	43.9	41	90.3	10	112.2	13	50.5	42
37	SC996284	65.1	24	57.2	23	53.7	14	92.9	8	114.6	8	81.4	5
38	SC996289	78.2	5	57.3	21	54.2	11	83.6	17	114.9	7	81.0	6
39	G39015	61.8	31	69.4	1	57.2	3	88.1	12	76.7	41	68.9	25
40	G39033	53.8	36	64.5	6	56.8	5	76.0	24	101.7	26	69.3	23
41	P92226E2-5-3-2	72.3	12	65.8	5	48.8	25	84.9	15	89.8	36	70.2	19
42	P961341A3-2-2	78.8	4	62.8	9	63.6	1	54.0	36	102.9	25	61.9	40
LOCATION MEANS		65.5		58.5		50.9		75.6		103.5		70.4	
LSD (.05)		16.9		7.2		6		13.5		13.39		10	
CV %		15.4		6.1		7.3		10.6		11.14		7.4	
REPS		2		2		3		2		4		2	
Harvest Plot Area (sq.ft.)		40		48		55		45.5		90		55	

YIELD (bu/acre)

		Wooster OH		Florence SC		Knoxville TN		Prosper TX		Blacksburg VA		Warsaw VA	
		b	rank	a	rank	a	rank	a	rank	a	rank	ab	rank
1	AGS 2000	68.6	26	69.9	8	56.6	40	55.2	17	55.3	27	56.1	29
2	USG 3209	67.3	29	66.0	12	81.7	3	59.0	7	54.7	31	60.9	18
3	Pioneer 26R61	67.4	28	54.6	33	74.0	12	60.2	3	52.1	37	50.4	39
4	McCormick	70.7	24	63.2	19	77.6	4	51.0	24	64.1	5	68.8	7
5	AR910-9-1	66.9	31	58.9	27	62.0	37	54.3	19	52.8	34	65.3	10
6	NC99-13022	47.3	42	69.7	10	68.5	22	55.3	16	45.2	42	61.6	16
7	VA00W-526	75.5	14	56.2	32	65.1	32	50.4	26	59.0	15	65.0	11
8	VA98W-335	73.0	18	51.0	37	70.3	19	44.1	36	50.8	39	69.1	6
9	VAN98W-342	83.0	1	63.3	18	71.1	18	23.4	42	56.0	25	73.7	1
10	VA98W-631	75.6	13	77.2	2	66.6	26	42.6	38	54.7	30	64.7	13
11	LA9560CA22-1	68.6	26	70.7	6	67.1	24	58.8	9	57.1	22	50.7	38
12	AR93035-4-1	64.9	33	61.7	23	72.2	14	56.8	11	55.2	28	53.4	33
13	SC980890	58.7	40	57.4	30	63.3	33	50.4	27	51.5	38	53.3	34
14	B980582	74.1	16	65.1	14	74.7	10	56.1	15	58.3	18	63.7	14
15	B980696	75.2	15	48.6	39	66.4	29	59.3	6	57.5	20	54.2	31
16	B980416	72.6	21	64.6	15	76.5	6	56.1	14	59.3	14	52.9	35
17	MD71-5	81.5	2	58.2	29	76.1	9	28.9	41	54.3	32	71.2	3
18	TX00D1626	71.9	23	64.0	16	62.6	34	54.5	18	52.6	35	51.1	37
19	TN04-01	76.9	10	62.5	21	74.7	10	48.2	29	58.7	17	54.0	32
20	AW D00-6383	70.7	24	58.8	28	66.1	30	47.4	32	55.1	29	59.0	25
21	AW D00*6874	79.2	4	63.7	17	72.2	14	64.2	1	64.7	4	57.3	28
22	AW D00*6847	57.7	41	59.6	26	62.3	35	59.3	5	60.8	12	54.2	30
23	NC00-15332	76.7	11	72.9	4	55.4	42	44.7	35	58.9	16	61.9	15
24	NC00-15385	61.0	37	65.4	13	71.9	16	56.6	12	57.8	19	60.0	20
25	NC00-15389	63.5	34	70.5	7	76.5	6	56.4	13	60.0	13	59.2	24
26	MD 11-52	75.7	12	53.6	34	76.5	6	39.7	40	61.2	9	66.0	9
27	MV 5-46	78.1	8	69.9	9	84.6	2	43.9	37	65.1	2	60.0	20
28	LA9585D17-2	61.5	36	62.9	20	58.4	39	47.3	33	62.3	8	58.9	26
29	LA925C104-1-3-B-4	60.4	38	80.0	1	66.5	28	47.5	31	53.6	33	47.0	41
30	B980006	72.3	22	69.0	11	67.6	23	50.3	28	57.3	21	51.1	36
31	G/F 951208-2E35	72.9	19	56.8	31	72.9	13	61.4	2	56.0	26	61.1	17
32	G/F 951079-2E31	79.1	5	37.4	41	66.6	26	52.0	22	64.8	3	60.9	19
33	G/F 95652-2E56	63.1	35	50.2	38	93.2	1	51.3	23	52.3	36	64.9	12
34	F/G 95195	72.9	20	53.2	35	76.8	5	47.8	30	61.0	11	69.8	5
35	F/G 951216-2E14	73.1	17	60.3	25	66.9	25	47.2	34	56.5	24	59.9	22
36	F/G 951216-2E26	59.6	39	61.8	22	71.4	17	59.0	8	66.3	1	67.6	8
37	SC996284	78.4	7	61.5	24	62.3	35	60.0	4	63.9	6	48.9	40
38	SC996289	78.4	6	75.4	3	60.2	38	57.6	10	62.4	7	46.8	42
39	G39015	66.1	32	71.7	5	70.3	19	52.4	21	61.1	10	70.9	4
40	G39033	67.2	30	46.9	40	56.3	41	51.0	25	56.7	23	58.7	27
41	P92226E2-5-3-2	80.0	3	22.3	42	69.5	21	41.8	39	46.4	41	59.3	23
42	P961341A3-2-2	77.9	9	52.1	36	66.1	30	53.0	20	47.9	40	73.7	1
LOCATION MEANS		70.6		60.9		69.5		51.3		57.2		59.9	
LSD (.05)		7.2		16.1		13		10.7				6.6	
CV %		6.2		16.2		11.5		12.8				8.1	
REPS				3		3				1		3	
Harvest Plot Area (sq.ft.)						39				42.75		45	

YIELD (bu/acre)

		ENTRY MEANS ALL LOCATIONS		ENTRY MEANS IN-REGION		ENTRY MEANS CV <10%	
			rank	[a]	rank	[b]	rank
1	AGS 2000	75.7	12	74.4	8	80.0	3
2	USG 3209	76.6	6	74.7	6	75.7	10
3	Pioneer 26R61	72.0	32	71.6	21	73.3	29
4	McCormick	75.7	14	72.2	18	72.8	32
5	AR910-9-1	75.1	16	72.4	16	74.6	16
6	NC99-13022	71.1	36	71.3	23	74.0	21
7	VA00W-526	76.4	8	73.3	13	75.3	11
8	VA98W-335	70.3	39	66.2	41	70.0	37
9	VAN98W-342	73.5	24	69.2	33	75.3	12
10	VA98W-631	74.1	20	72.7	15	73.4	27
11	LA9560CA22-1	76.5	7	74.3	9	76.2	9
12	AR93035-4-1	73.7	21	70.6	25	74.1	20
13	SC980890	65.5	42	63.2	42	62.3	42
14	B980582	76.1	10	73.4	12	74.8	13
15	B980696	73.7	22	68.0	37	73.4	25
16	B980416	75.7	13	72.1	19	74.3	18
17	MD71-5	71.1	37	67.4	38	71.4	35
18	TX00D1626	73.0	29	68.8	34	73.7	23
19	TN04-01	73.5	23	70.5	27	72.9	31
20	AW D00-6383	73.0	27	70.1	31	77.1	7
21	AW D00*6874	80.5	1	77.4	2	77.9	4
22	AW D00*6847	74.3	19	72.2	17	74.5	17
23	NC00-15332	78.3	3	74.8	5	73.3	30
24	NC00-15385	77.4	5	74.9	4	77.7	5
25	NC00-15389	76.1	11	74.4	7	76.5	8
26	MD 11-52	72.1	31	71.4	22	73.3	28
27	MV 5-46	79.5	2	78.6	1	82.9	1
28	LA9585D17-2	69.0	41	67.2	39	73.6	24
29	LA925C104-1-3-B-4	69.5	40	66.3	40	64.4	41
30	B980006	71.5	34	70.3	29	73.4	26
31	G/F 951208-2E35	73.0	28	70.6	26	69.5	38
32	G/F 951079-2E31	71.5	35	68.2	36	66.6	40
33	G/F 95652-2E56	75.0	17	73.0	14	71.3	36
34	F/G 95195	74.6	18	71.7	20	74.8	15
35	F/G 951216-2E14	71.6	33	70.2	30	68.6	39
36	F/G 951216-2E26	73.5	25	71.2	24	71.7	34
37	SC996284	77.7	4	75.4	3	77.2	6
38	SC996289	76.3	9	74.0	10	72.2	33
39	G39015	75.5	15	73.9	11	80.4	2
40	G39033	72.9	30	70.3	28	74.8	14
41	P92226E2-5-3-2	71.0	38	68.4	35	73.7	22
42	P961341A3-2-2	73.1	26	69.8	32	74.2	19
LOCATION MEANS		74.0		71.4		73.7	
LSD (.05)							
CV %							
REPS							
Harvest Plot Area (sq.ft.)							

TEST WEIGHT (lbs/bu)

		Belle Mina AL	Bay AR	DeWitt AR	Stuttgart AR	Georgetown DE
1	AGS 2000	57.4	59.6	58.7	60.6	59.0
2	USG 3209	55.3	57.6	59.1	58.1	57.3
3	Pioneer 26R61	56.1	58.8	59.7	59.6	60.6
4	McCormick	56.3	60.0	58.7	60.2	60.0
5	AR910-9-1	55.4	58.3	57.2	57.8	57.9
6	NC99-13022	54.6	57.4	57.9	57.3	57.9
7	VA00W-526	55.6	58.2	57.9	60.0	59.4
8	VA98W-335	55.0	59.0	57.5	59.0	56.5
9	VAN98W-342	55.0	59.0	56.1	58.3	56.6
10	VA98W-631	52.6	55.9		57.1	55.8
11	LA9560CA22-1	56.2	60.2		60.4	61.2
12	AR93035-4-1	54.9	58.9	58.7	59.4	58.7
13	SC980890	54.6	58.6	56.7	58.8	59.3
14	B980582	57.5	61.1	60.3	60.4	59.6
15	B980696	55.9	59.6	59.8	60.3	59.0
16	B980416	54.9	58.1	58.0	59.0	59.2
17	MD71-5	54.6	59.4	55.1	57.9	57.3
18	TX00D1626	53.3	58.7	58.2	59.7	57.8
19	TN04-01	58.3	62.0	61.1	62.4	61.8
20	AW D00-6383	53.3	53.2	57.2	56.8	57.2
21	AW D00*6874	57.1	60.4	59.9	61.0	59.6
22	AW D00*6847	55.1	57.7	57.2	58.7	59.7
23	NC00-15332	54.7	57.1	56.3	58.9	56.2
24	NC00-15385	56.2	59.7	59.3	59.8	60.3
25	NC00-15389	57.0	60.1	58.5	60.0	59.1
26	MD 11-52	54.6	59.8	57.5	59.0	56.7
27	MV 5-46	56.3	60.5		59.1	59.5
28	LA9585D17-2	56.0	59.2	57.8	58.8	59.6
29	LA925C104-1-3-B-4	55.7	60.1	58.9	60.6	57.5
30	B980006	54.6	59.0		58.6	57.5
31	G/F 951208-2E35	55.7	59.0	58.6	58.7	53.2
32	G/F 951079-2E31	56.1	59.9	59.7	60.7	57.8
33	G/F 95652-2E56	56.2	58.9	56.8	58.4	57.9
34	F/G 95195	55.7	59.3	57.3	59.3	56.8
35	F/G 951216-2E14	56.0	59.9	58.8	59.3	57.8
36	F/G 951216-2E26	55.5	60.0	60.9	59.8	58.5
37	SC996284	55.5	60.7	61.1	59.9	60.9
38	SC996289	54.2	60.0	58.5	58.5	57.8
39	G39015	54.7	57.4	53.0	59.2	59.6
40	G39033	54.3	57.3	58.8	59.3	58.0
41	P92226E2-5-3-2	51.9	53.3	56.3	56.0	52.0
42	P961341A3-2-2	53.9	58.3	58.9	58.3	56.6
LOCATION MEANS		55.3	58.8	58.2	59.2	58.2

TEST WEIGHT (lbs/bu)

		Quincy FL	Griffin GA	Plains GA	Aberdeen ID	Greensburg IN
1	AGS 2000	60.9	60	58	61.1	53.4
2	USG 3209	57.2	60	58	61.2	53.6
3	Pioneer 26R61	61.2	60	60	61.2	50.4
4	McCormick	59.3	62	60	62.2	60.6
5	AR910-9-1	59.8	59	58	59.7	57.8
6	NC99-13022	60.4	59	58	60.4	51.5
7	VA00W-526	58.3	60	59	61.4	59.2
8	VA98W-335	56.6	59	60	61.0	58.9
9	VAN98W-342	59.1	58	58	60.5	57.3
10	VA98W-631	58.0	58	57	60.1	49.4
11	LA9560CA22-1	61.8	62	60	61.0	59.4
12	AR93035-4-1	58.8	60	59	61.8	57.9
13	SC980890	60.3	59	58	59.1	53.1
14	B980582	60.5	60	59	60.2	61.9
15	B980696	57.8	61	61	62.2	61.0
16	B980416	59.1	60	60	57.9	59.0
17	MD71-5	58.9	58	58	60.1	56.5
18	TX00D1626	60.3	58	58	57.6	59.7
19	TN04-01	61.9	61	61	62.1	61.1
20	AW D00-6383	55.5	58	58	58.9	54.4
21	AW D00*6874	61.2	60	60	60.8	58.6
22	AW D00*6847	59.3	60	59	60.2	56.5
23	NC00-15332	60.4	58	59	58.6	61.6
24	NC00-15385	61.6	60	58	62.2	56.0
25	NC00-15389	60.6	60	58	61.7	53.4
26	MD 11-52	58.7	59	59	60.3	56.3
27	MV 5-46	61.9	60	59	61.1	57.0
28	LA9585D17-2	60.3	60	59	61.0	57.8
29	LA925C104-1-3-B-4	60.0	61	58	60.7	57.8
30	B980006	56.7	60	60	60.9	
31	G/F 951208-2E35	60.6	59	56	60.9	53.9
32	G/F 951079-2E31	59.0	60	59	61.5	59.8
33	G/F 95652-2E56	58.2	59	57	60.7	55.5
34	F/G 95195	60.6	59	57	60.5	56.5
35	F/G 951216-2E14	58.2	61	59	62.0	51.4
36	F/G 951216-2E26	56.7	61	60	62.1	54.4
37	SC996284	59.3	61	60	61.7	59.0
38	SC996289	58.3	60	59	60.6	57.0
39	G39015	57.3	60	60	60.5	57.6
40	G39033	57.6	60	58	60.1	58.2
41	P92226E2-5-3-2	59.6	59	57	59.6	59.2
42	P961341A3-2-2	58.0	59	58	60.1	57.3
LOCATION MEANS		59.3	59.7	58.7	60.6	56.9

TEST WEIGHT (lbs/bu)

		Lafayette IN	Logan Co. KY	Woodford Co. KY	Queenstown MD	Portageville MO
1	AGS 2000	58.4	51.0	52.8	56.2	50.5
2	USG 3209	59.4	51.1	49.7	57.2	49.2
3	Pioneer 26R61	58.4	53.1	52.1	57.9	51.6
4	McCormick	61.6	53.4	52.1	57.6	50.1
5	AR910-9-1	54.5	53.8	54.6	55.3	51.0
6	NC99-13022	57.8	51.7	49.2	56.2	48.4
7	VA00W-526	59.8	53.0	48.9	55.7	51.0
8	VA98W-335	60.3	52.3	51.3	56.7	49.7
9	VAN98W-342	59.2	52.9	53.6	56.4	47.5
10	VA98W-631	55.7	49.7	50.6	53.4	44.8
11	LA9560CA22-1	61.4	54.2	56.4	59.1	55.7
12	AR93035-4-1	60.5	52.7	49.1	55.8	50.2
13	SC980890	59.0	51.7	51.1	57.6	51.3
14	B980582	61.4	55.3	54.5	58.9	54.7
15	B980696	62.0	55.8	57.5	58.6	55.9
16	B980416	59.0	54.4	51.6	57.3	54.1
17	MD71-5	58.8	51.6	55.4	55.2	48.1
18	TX00D1626	58.3	51.5	55.9	57.2	50.7
19	TN04-01	62.0	53.5	59.3	59.6	54.3
20	AW D00-6383	58.2	50.0	51.1	55.1	48.0
21	AW D00*6874	59.9	53.7	55.7	58.2	52.6
22	AW D00*6847	58.9	50.1	54.2	57.7	49.8
23	NC00-15332	57.0	51.8	56.0	54.8	52.1
24	NC00-15385	59.3	53.0	55.1	58.6	51.0
25	NC00-15389	59.5	52.4	57.3	57.4	49.9
26	MD 11-52	58.3	52.1	54.1	55.8	51.4
27	MV 5-46	60.6	52.8	57.8	57.5	52.2
28	LA9585D17-2	55.6	53.9	53.3	56.7	52.1
29	LA925C104-1-3-B-4	58.7	53.0	52.6	58.0	53.6
30	B980006	60.0	53.4	51.8	57.4	51.8
31	G/F 951208-2E35	59.3	50.2	53.7	56.2	44.4
32	G/F 951079-2E31	59.9	54.5	56.4	57.5	50.2
33	G/F 95652-2E56	58.8	52.8	51.9	56.3	47.6
34	F/G 95195	59.1	51.9	53.8	57.2	48.6
35	F/G 951216-2E14	61.1	53.7	55.4	58.5	50.8
36	F/G 951216-2E26	60.7	54.1	56.9	56.8	48.7
37	SC996284	61.0	54.7	57.4	59.0	55.3
38	SC996289	60.5	52.6	54.5	58.9	55.6
39	G39015	60.1	53.7	51.1	56.9	52.9
40	G39033	59.7	54.5	54.7	57.2	51.7
41	P92226E2-5-3-2	57.5	52.2	52.8	55.5	48.1
42	P961341A3-2-2	58.6	53.1	55.0	55.6	53.9
LOCATION MEANS		59.3	52.8	53.8	57.0	51.0

TEST WEIGHT (lbs/bu)

		Newton MS	Kinston NC	Wooster OH	Florence SC	Knoxville TN
1	AGS 2000	61	59.2	54.0	55.9	50.4
2	USG 3209	62	57.6	51.9	55.2	51.1
3	Pioneer 26R61	61	59.2	52.5	57.2	56.7
4	McCormick	62	59.1	52.8	57.5	57.0
5	AR910-9-1	58	57.3	49.9	55.6	52.7
6	NC99-13022	59	57.4	49.4	55.5	55.1
7	VA00W-526	60	57.5	53.5	55.7	55.5
8	VA98W-335	59	58.0	52.5	57.0	56.1
9	VAN98W-342	58	57.2	52.4	54.6	55.6
10	VA98W-631	56	57.9	49.7	53.6	51.3
11	LA9560CA22-1	63	60.4	55.7	57.4	59.0
12	AR93035-4-1	59	57.8	52.8	57.3	56.9
13	SC980890	58	57.3	54.3	54.2	55.8
14	B980582	60	59.3	55.4	57.0	58.7
15	B980696	62	56.8	53.9	57.0	58.0
16	B980416	60	57.6	54.2	56.9	55.2
17	MD71-5	58	57.8	52.6	55.7	55.9
18	TX00D1626	59	57.0	52.6	54.3	55.9
19	TN04-01	63	60.8	57.9	58.7	
20	AW D00-6383	59	56.3	49.4	54.1	51.8
21	AW D00*6874	60	59.1	53.2	56.6	56.1
22	AW D00*6847	61	58.4	49.5	55.4	50.4
23	NC00-15332	60	56.9	51.4	55.5	53.7
24	NC00-15385	61	58.9	50.7	56.5	57.3
25	NC00-15389	62	58.7	54.3	57.6	58.0
26	MD 11-52	61	58.3	53.2	55.9	54.0
27	MV 5-46	62	58.9	53.7	56.5	58.2
28	LA9585D17-2	60	57.8	53.5	54.5	57.2
29	LA925C104-1-3-B-4	61	57.9	53.4	55.9	56.7
30	B980006	60	56.9	53.5	53.6	55.0
31	G/F 951208-2E35	59	58.1	53.3	56.2	54.7
32	G/F 951079-2E31	62	59.5	55.6	56.3	57.6
33	G/F 95652-2E56	60	56.3	48.6	56.7	
34	F/G 95195	59	55.8	53.6	56.3	54.4
35	F/G 951216-2E14	59	59.4	54.4	55.1	57.4
36	F/G 951216-2E26	60	58.0	51.2	54.8	57.4
37	SC996284	61	59.7	55.0	55.9	58.8
38	SC996289	60	58.9	54.4	54.6	57.7
39	G39015	60	57.6	50.9	55.2	55.8
40	G39033	60	58.0	50.3	55.4	54.5
41	P92226E2-5-3-2	58	55.1	54.9	55.6	53.8
42	P961341A3-2-2	60	57.2	49.1	54.2	56.5
LOCATION MEANS		60.1	58.0	52.7	55.8	55.6

TEST WEIGHT (lbs/bu)

		Prosper TX	Blacksburg VA	Warsaw VA	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	54.4	56.3	55.4	56.7	21
2	USG 3209	55.7	54.8	54.3	55.9	35
3	Pioneer 26R61	56.6	57.1	57.5	57.3	14
4	McCormick	56.2	56.1	55.9	57.9	8
5	AR910-9-1	55.3	53.9	54.1	56.0	34
6	NC99-13022	56.2	53.5	55.4	55.6	39
7	VA00W-526	57.5	54.7	56.4	56.9	20
8	VA98W-335	55.3	53.5	55.9	56.5	25
9	VAN98W-342	51.4	53.5	54.1	55.8	37
10	VA98W-631	51.8	52.3	52.8	53.8	42
11	LA9560CA22-1	57.5	57.5	57.0	58.9	2
12	AR93035-4-1	55.7	56.5	56.5	56.9	19
13	SC980890	54.9	55.0	55.5	56.2	32
14	B980582	57.0	56.2	56.9	58.5	4
15	B980696	57.9	55.5	57.0	58.5	5
16	B980416	55.7	55.3	56.8	57.1	17
17	MD71-5	49.7	53.6	54.6	55.8	38
18	TX00D1626	57.0	54.7	55.2	56.5	24
19	TN04-01	57.9	58.1	56.9	59.7	1
20	AW D00-6383	51.4	52.4	54.4	54.5	41
21	AW D00*6874	56.6	57.1	56.0	58.0	6
22	AW D00*6847	54.0	54.9	55.6	56.2	31
23	NC00-15332	55.3	53.1	55.8	56.3	30
24	NC00-15385	57.9	55.2	56.6	57.6	11
25	NC00-15389	56.6	56.1	56.9	57.6	10
26	MD 11-52	55.3	53.5	55.6	56.5	27
27	MV 5-46	55.7	56.5	56.4	57.9	7
28	LA9585D17-2	54.9	57.2	56.7	57.1	18
29	LA925C104-1-3-B-4	54.4	57.2	57.3	57.4	12
30	B980006	56.6	55.8	56.1	56.6	23
31	G/F 951208-2E35	55.7	53.9	55.3	55.9	36
32	G/F 951079-2E31	54.9	55.5	56.7	57.8	9
33	G/F 95652-2E56	54.4	55.0	55.9	56.0	33
34	F/G 95195	52.3	55.4	55.6	56.3	29
35	F/G 951216-2E14	57.0	56.0	54.8	57.2	16
36	F/G 951216-2E26	58.3	56.7	55.3	57.3	15
37	SC996284	59.6	56.5	55.9	58.6	3
38	SC996289	57.9	54.5	56.0	57.4	13
39	G39015	56.6	54.8	54.7	56.5	26
40	G39033	55.7	55.6	54.9	56.7	22
41	P92226E2-5-3-2	51.0	51.6	53.5	54.9	40
42	P961341A3-2-2	55.3	53.9	55.1	56.3	28
LOCATION MEANS		55.5	55.2	55.7	56.8	

HEADING DATE (Julian Days)

		Belle Mina AL	Bay AR	DeWitt AR	Stuttgart AR	Georgetown DE
1	AGS 2000	104	108	97.7	104	130
2	USG 3209	105	109	101.0	110	131
3	Pioneer 26R61	109	107	102.5	112	130
4	McCormick	109	111	107.7	111	130
5	AR910-9-1	106	110	100.3	110	127
6	NC99-13022	109	111	100.5	112	131
7	VA00W-526	109	111	104.7	112	131
8	VA98W-335	107	111	105.0	109	131
9	VAN98W-342	105	106	99.0	108	128
10	VA98W-631	111	112	108.0	108	126
11	LA9560CA22-1	108	109	102.0	108	130
12	AR93035-4-1	111	111	109.2	111	131
13	SC980890	103	105	89.0	105	127
14	B980582	104	107	101.3	107	126
15	B980696	111	114	109.7	110	131
16	B980416	110	112	108.7	110	130
17	MD71-5	106	107	101.2	107	128
18	TX00D1626	106	110	107.3	107	128
19	TN04-01	109	109	106.5	106	131
20	AW D00-6383	109	112	107.5	107	130
21	AW D00*6874	106	108	105.5	106	130
22	AW D00*6847	105	112	107.5	109	131
23	NC00-15332	109	113	109.8	112	134
24	NC00-15385	103	105	93.2	110	128
25	NC00-15389	103	104	93.0	105	127
26	MD 11-52	105	109	101.2	105	128
27	MV 5-46	104	109	97.2	107	129
28	LA9585D17-2	107	107	96.2	112	131
29	LA925C104-1-3-B-4	111	111	106.5	112	134
30	B980006	109	111	103.5	109	127
31	G/F 951208-2E35	104	106	100.7	107	126
32	G/F 951079-2E31	104	106	102.7	107	127
33	G/F 95652-2E56	103	109	101.7	108	129
34	F/G 95195	104	106	99.0	110	126
35	F/G 951216-2E14	105	110	102.2	107	130
36	F/G 951216-2E26	106	110	102.3	108	130
37	SC996284	105	107	104.2	111	129
38	SC996289	105	110	103.2	112	129
39	G39015	110	112	107.8	112	129
40	G39033	109	111	107.2	112	128
41	P92226E2-5-3-2	107	110	104.2	112	128
42	P961341A3-2-2	106	109	107.0	112	128
LOCATION MEANS		106.7	109.2	103.0	109.0	129.2

HEADING DATE (Julian Days)

		Quincy FL	Griffin GA	Plains GA	Aberdeen ID	Evansville IN
1	AGS 2000	84	101	92	146	120.0
2	USG 3209	87	100	90	148	120.0
3	Pioneer 26R61	87	103	94	147	119.5
4	McCormick	87	104	95	146	121.5
5	AR910-9-1	83	100	92	146	119.5
6	NC99-13022	83	104	93	150	121.5
7	VA00W-526	88	103	93	147	122.0
8	VA98W-335	100	103	96	148	122.0
9	VAN98W-342	98	102	95	146	119.0
10	VA98W-631	90	103	94	148	121.5
11	LA9560CA22-1	82	102	89	148	121.0
12	AR93035-4-1	90	105	94	147	121.5
13	SC980890	76	100	97	146	120.5
14	B980582	81	100	91	144	117.0
15	B980696	102	106	101	148	125.0
16	B980416	97	105	100	146	124.0
17	MD71-5	96	102	95	147	119.0
18	TX00D1626	87	101	93	146	121.5
19	TN04-01	93	105	98	146	120.0
20	AW D00-6383	98	105	99	146	121.5
21	AW D00*6874	86	100	92	146	120.0
22	AW D00*6847	93	102	94	147	121.0
23	NC00-15332	91	105	96	148	124.5
24	NC00-15385	87	97	90	147	120.0
25	NC00-15389	76	97	88	147	119.0
26	MD 11-52	94	103	100	147	120.5
27	MV 5-46	84	103	94	147	119.5
28	LA9585D17-2	81	103	94	146	121.0
29	LA925C104-1-3-B-4	84	103	93	151	124.5
30	B980006	95	103	98	144	119.0
31	G/F 951208-2E35	83	100	89	144	118.5
32	G/F 951079-2E31	83	100	88	145	118.5
33	G/F 95652-2E56	82	99	88	146	120.0
34	F/G 95195	82	101	92	146	118.5
35	F/G 951216-2E14	86	101	91	147	120.5
36	F/G 951216-2E26	86	102	92	147	121.0
37	SC996284	85	102	92	147	122.5
38	SC996289	87	102	91	147	121.5
39	G39015	99	105	101	147	124.0
40	G39033	94	103	99	144	121.0
41	P92226E2-5-3-2	94	102	98	143	119.5
42	P961341A3-2-2	90	102	94	145	121.5
LOCATION MEANS		88.4	102.1	93.9	146.4	120.8

HEADING DATE (Julian Days)

		Lafayette IN	Logan Co. KY	Woodford Co. KY	Baton Rouge LA	Queenstown MD
1	AGS 2000	130	118	127	86	129
2	USG 3209	130	119	127	87	129
3	Pioneer 26R61	131	120	129		129
4	McCormick	130	120	127	93	128
5	AR910-9-1	132	120	128	85	129
6	NC99-13022	130	120	129	87	128
7	VA00W-526	131	121	128	95	128
8	VA98W-335	131	121	129	V LATE	129
9	VAN98W-342	130	119	127	104	127
10	VA98W-631	130	121	128	98	129
11	LA9560CA22-1	130	120	128	86	130
12	AR93035-4-1	132	122	128	95	129
13	SC980890	129	118	127	83	126
14	B980582	127	118	126	87	125
15	B980696	132	123	128	V LATE	129
16	B980416	130	122	128	107	129
17	MD71-5	130	120	128	105	129
18	TX00D1626	129	121	127	95	129
19	TN04-01	130	121	128	97	128
20	AW D00-6383	129	122	127	V LATE	129
21	AW D00*6874	129	120	127	90	129
22	AW D00*6847	130	120	128	91	128
23	NC00-15332	131	123	128	101	130
24	NC00-15385	130	118	127	80	127
25	NC00-15389	130	116	127	79	126
26	MD 11-52	129	120	126	98	128
27	MV 5-46	130	119	126	87	128
28	LA9585D17-2	134	122	129	88	129
29	LA925C104-1-3-B-4	133	122	128	87	131
30	B980006	129	120	127	V LATE	126
31	G/F 951208-2E35	128	118	125	89	125
32	G/F 951079-2E31	128	118	125	86	126
33	G/F 95652-2E56	129	121	127	84	128
34	F/G 95195	129	117	126	84	125
35	F/G 951216-2E14	130	120	127	95	129
36	F/G 951216-2E26	129	121	126	88	129
37	SC996284	129	120	128	87	127
38	SC996289	129	121	128	88	128
39	G39015	130	121	128	105	128
40	G39033	130	122	128	102	128
41	P92226E2-5-3-2	129	120	126	105	127
42	P961341A3-2-2	129	121	127	99	126
LOCATION MEANS		129.9	120.1	127.3	92.0	128.0

HEADING DATE (Julian Days)

		Portageville MO	Cleveland MS	Kinston NC	Wooster OH	Florence SC
1	AGS 2000	123.7	97.0	105.0	139	108.5
2	USG 3209	123.0	100.4	108.0	140	108.5
3	Pioneer 26R61	121.3	99.9	108.5	141	110.0
4	McCormick	123.7	104.0	111.0	139	109.0
5	AR910-9-1	123.3	99.2	107.0	141	109.5
6	NC99-13022	124.0	102.0	109.5	144	109.5
7	VA00W-526	124.3	102.8	111.0	142	109.0
8	VA98W-335	123.3	103.7	110.5	141	109.0
9	VAN98W-342	120.7	101.0	109.0	139	109.0
10	VA98W-631	123.0	106.5	111.5	142	110.0
11	LA9560CA22-1	122.3	100.2	108.5	143	108.5
12	AR93035-4-1	123.0	106.2	111.5	141	111.0
13	SC980890	119.7	87.7	102.0	141	108.5
14	B980582	122.0	99.0	106.5	139	108.0
15	B980696	123.7	106.7	112.0	141	111.0
16	B980416	124.0	106.5	111.5	139	111.0
17	MD71-5	120.0	100.7	109.0	139	111.0
18	TX00D1626	122.0	101.7	108.0	139	108.5
19	TN04-01	120.7	103.7	110.5	139	109.5
20	AW D00-6383	122.7	104.2	110.5	139	109.0
21	AW D00*6874	122.3	101.2	107.0	139	108.5
22	AW D00*6847	122.2	105.7	110.0	142	109.0
23	NC00-15332	124.0	106.2	112.0	142	110.0
24	NC00-15385	122.3	94.7	104.0	142	108.0
25	NC00-15389	121.0	93.5	104.5	141	107.0
26	MD 11-52	119.7	102.3	109.5	139	108.5
27	MV 5-46	120.0	100.4	107.5	139	109.0
28	LA9585D17-2	123.3	96.0	110.5	142	111.0
29	LA925C104-1-3-B-4	125.3	101.2	110.5	143	111.0
30	B980006	121.7	104.5	109.5	139	111.0
31	G/F 951208-2E35	121.0	99.8	106.5	139	108.0
32	G/F 951079-2E31	117.3	101.3	106.5	138	107.5
33	G/F 95652-2E56	119.7	99.5	107.0	141	107.5
34	F/G 95195	119.0	98.7	105.5	138	108.0
35	F/G 951216-2E14	122.7	102.5	111.0	141	108.5
36	F/G 951216-2E26	121.7	101.2	109.0	142	109.0
37	SC996284	122.7	102.0	108.0	141	109.0
38	SC996289	122.7	103.2	109.5	141	109.0
39	G39015	124.0	106.0	111.0	140	110.5
40	G39033	121.7	105.2	111.5	140	109.0
41	P92226E2-5-3-2	122.3	105.2	110.5	139	108.5
42	P961341A3-2-2	121.0	105.3	108.5	139	110.0
LOCATION MEANS		122.1	101.6	108.8	140.4	109.2

HEADING DATE (Julian Days)

		Knoxville TN	Blacksburg VA	Warsaw VA	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	123	128	118	113.8	9
2	USG 3209	121	130	118	114.9	13
3	Pioneer 26R61	124	130	120	117.0	31
4	McCormick	122	129	120	116.4	27
5	AR910-9-1	119	129	118	114.5	11
6	NC99-13022	122	130	122	116.1	25
7	VA00W-526	123	131	122	116.9	30
8	VA98W-335	119	130	120	118.1	37
9	VAN98W-342	118	129	118	115.5	19
10	VA98W-631	119	131	122	117.0	32
11	LA9560CA22-1	121	130	121	115.1	15
12	AR93035-4-1	120	130	121	117.4	35
13	SC980890	118	127	116	111.8	2
14	B980582	118	127	116	112.9	5
15	B980696	124	130	123	120.0	42
16	B980416	124	129	121	118.5	40
17	MD71-5	118	129	118	115.8	23
18	TX00D1626	119	129	118	115.3	18
19	TN04-01	122	129	121	116.7	29
20	AW D00-6383	121	130	120	118.1	38
21	AW D00*6874	119	129	118	114.7	12
22	AW D00*6847	124	129	121	116.5	28
23	NC00-15332	124	130	123	118.5	41
24	NC00-15385	120	129	117	113.0	7
25	NC00-15389	119	128	117	111.6	1
26	MD 11-52	118	129	118	115.5	22
27	MV 5-46	119	128	117	114.1	10
28	LA9585D17-2	122	130	121	115.5	20
29	LA925C104-1-3-B-4	125	131	125	117.5	36
30	B980006	121	129	119	117.1	33
31	G/F 951208-2E35	118	127	117	113.0	6
32	G/F 951079-2E31	118	127	117	112.9	4
33	G/F 95652-2E56	119	129	118	113.7	8
34	F/G 95195	118	127	117	112.9	3
35	F/G 951216-2E14	119	129	118	115.3	17
36	F/G 951216-2E26	121	129	118	115.1	16
37	SC996284	119	129	117	115.0	14
38	SC996289	122	129	118	115.5	21
39	G39015	123	129	120	118.4	39
40	G39033	121	129	118	117.1	34
41	P92226E2-5-3-2	118	128	117	116.2	26
42	P961341A3-2-2	119	129	118	115.9	24
LOCATION MEANS		120.5	129.0	119.0	115.5	

HEIGHT (inches)

		Belle Mina AL	Bay AR	DeWitt AR	Stuttgart AR	Georgetown DE
1	AGS 2000	39	38	41.9	34	35
2	USG 3209	34	36	38.4	33	30
3	Pioneer 26R61	40	39	41.7	36	34
4	McCormick	37	36	38.0	30	31
5	AR910-9-1	40	40	45.7	36	35
6	NC99-13022	36	35	38.4	30	31
7	VA00W-526	32	35	36.4	30	30
8	VA98W-335	33	34	34.8	30	26
9	VAN98W-342	34	35	36.6	29	30
10	VA98W-631	36	37	38.4	33	30
11	LA9560CA22-1	42	40	43.3	35	37
12	AR93035-4-1	41	38	43.9	34	32
13	SC980890	38	37	43.9	37	33
14	B980582	41	39	41.7	33	33
15	B980696	38	38	46.9	35	31
16	B980416	36	36	42.3	35	31
17	MD71-5	34	34	36.2	33	29
18	TX00D1626	37	36	40.0	32	30
19	TN04-01	40	41	45.5	37	35
20	AW D00-6383	38	37	44.3	33	32
21	AW D00*6874	35	38	41.9	32	31
22	AW D00*6847	36	36	42.5	34	33
23	NC00-15332	38	38	44.3	34	30
24	NC00-15385	33	35	37.4	28	29
25	NC00-15389	34	35	38.0	27	30
26	MD 11-52	33	33	36.2	29	27
27	MV 5-46	34	36	41.9	32	31
28	LA9585D17-2	38	40	42.9	35	33
29	LA925C104-1-3-B-4	35	34	40.2	32	29
30	B980006	39	38	46.5	36	34
31	G/F 951208-2E35	37	35	38.4	30	29
32	G/F 951079-2E31	39	40	44.1	35	31
33	G/F 95652-2E56	38	36	41.3	35	30
34	F/G 95195	38	39	41.3	36	34
35	F/G 951216-2E14	40	37	42.5	35	31
36	F/G 951216-2E26	39	37	42.9	35	33
37	SC996284	41	40	47.0	38	35
38	SC996289	41	42	47.2	37	36
39	G39015	42	40	44.7	38	36
40	G39033	41	41	47.6	37	36
41	P92226E2-5-3-2	33	35	37.4	28	28
42	P961341A3-2-2	36	37	40.9	33	31
LOCATION MEANS		37.3	37.2	41.6	33.4	31.7

HEIGHT (inches)

		Quincy FL	Griffin GA	Plains GA	Evansville IN	Lafayette IN
1	AGS 2000	37.0	36	31	36.0	
2	USG 3209	30.0	30	30	35.0	
3	Pioneer 26R61	33.5	35	33	42.0	
4	McCormick	31.0	30	31	36.5	35
5	AR910-9-1	40.0	36	36	42.5	30
6	NC99-13022	36.0	28	31	36.5	32
7	VA00W-526	33.5	29	29	34.0	32
8	VA98W-335	33.0	28	28	32.0	33
9	VAN98W-342	33.5	30	27	36.0	31
10	VA98W-631	35.5	30	33	37.5	37
11	LA9560CA22-1	38.5	36	37	39.5	40
12	AR93035-4-1	39.5	36	33	39.5	40
13	SC980890	38.5	36	33	40.5	40
14	B980582	40.0	36	33	40.5	37
15	B980696	34.5	35	32	38.0	40
16	B980416	35.5	34	30	38.5	38
17	MD71-5	31.5	30	28	34.0	37
18	TX00D1626	39.0	31	32	39.5	33
19	TN04-01	41.0	36	34	40.0	40
20	AW D00-6383	39.0	34	34	38.0	
21	AW D00*6874	36.0	36	34	41.0	
22	AW D00*6847	34.0	32	32	39.0	
23	NC00-15332	41.0	31	32	40.0	
24	NC00-15385	36.0	31	31	36.0	34
25	NC00-15389	35.0	29	30	36.0	37
26	MD 11-52	32.5	26	27	33.5	34
27	MV 5-46	34.5	30	30	37.5	35
28	LA9585D17-2	35.5	35	35	40.0	35
29	LA925C104-1-3-B-4	35.5	31	31	36.5	39
30	B980006	43.0	35	34	41.5	39
31	G/F 951208-2E35	34.0	29	30	34.0	36
32	G/F 951079-2E31	36.0	33	33	42.0	37
33	G/F 95652-2E56	36.0	31	29	37.0	36
34	F/G 95195	34.5	34	33	40.0	39
35	F/G 951216-2E14	35.0	33	32	38.5	36
36	F/G 951216-2E26	35.0	32	33	37.5	37
37	SC996284	40.0	33	36	41.5	43
38	SC996289	41.5	35	36	40.0	43
39	G39015	39.5	33	33	44.0	42
40	G39033	38.5	34	34	45.0	
41	P92226E2-5-3-2	35.5	29	30	37.5	
42	P961341A3-2-2	30.5	30	32	37.5	
LOCATION MEANS		36.2	32.3	32.0	38.4	36.8

HEIGHT (inches)

		Logan Co. KY	Woodford Co. KY	Baton Rouge LA	Queenstown MD	Portageville MO
1	AGS 2000	40	40	41	37.0	38
2	USG 3209	36	36	35	33.5	34
3	Pioneer 26R61	43	40		37.0	37
4	McCormick	36	35	31	31.5	32
5	AR910-9-1	43	41	41	38.0	39
6	NC99-13022	36	37	36	32.5	32
7	VA00W-526	36	34	33	32.0	32
8	VA98W-335	36	34	31	30.0	30
9	VAN98W-342	34	35	33	29.0	30
10	VA98W-631	38	37	35	32.0	33
11	LA9560CA22-1	43	37	41	39.5	36
12	AR93035-4-1	41	38	40	34.5	35
13	SC980890	39	40	43	40.5	41
14	B980582	40	41	40	38.5	37
15	B980696	42	43	37	36.0	34
16	B980416	37	38	40	34.0	33
17	MD71-5	35	34	34	30.5	30
18	TX00D1626	37	38	36	32.5	32
19	TN04-01	41	37	41	38.0	35
20	AW D00-6383	40	36	41	37.0	34
21	AW D00*6874	38	41	39	35.5	36
22	AW D00*6847	38	38	36	34.5	34
23	NC00-15332	41	41	42	34.5	33
24	NC00-15385	35	38	33	32.0	33
25	NC00-15389	36	36	33	33.0	35
26	MD 11-52	34	35	32	28.0	28
27	MV 5-46	38	36	35	34.0	33
28	LA9585D17-2	39	38	40	35.0	37
29	LA925C104-1-3-B-4	35	35	35	32.5	34
30	B980006	41	38	39	36.5	35
31	G/F 951208-2E35	35	35	35	33.5	31
32	G/F 951079-2E31	38	37	40	36.5	33
33	G/F 95652-2E56	37	36	37	32.5	32
34	F/G 95195	39	39	37	37.5	34
35	F/G 951216-2E14	39	37	39	35.0	33
36	F/G 951216-2E26	39	37	38	35.5	35
37	SC996284	40	40	42	39.5	33
38	SC996289	39	39	43	40.0	38
39	G39015	43	41	43	38.0	37
40	G39033	45	42	43	39.5	36
41	P92226E2-5-3-2	36	36	33	32.0	32
42	P961341A3-2-2	37	38	37	33.5	34
LOCATION MEANS		38.5	37.7	37.6	34.8	34.0

HEIGHT (inches)

		Cleveland MS	Newton MS	Kinston NC	Wooster OH	Florence SC
1	AGS 2000	41.9	38	33	39	32.5
2	USG 3209	39.4	36	31	35	28.0
3	Pioneer 26R61	45.5	40	36	38	32.0
4	McCormick	40.0	34	32	33	30.5
5	AR910-9-1	46.9	38	37	37	34.5
6	NC99-13022	39.6	36	33	32	31.0
7	VA00W-526	37.2	34	27	33	28.0
8	VA98W-335	34.6	33	30	31	30.5
9	VAN98W-342	37.6	33	31	32	27.0
10	VA98W-631	39.8	36	36	34	32.0
11	LA9560CA22-1	44.7	39	40	38	34.0
12	AR93035-4-1	44.7	38	35	36	32.0
13	SC980890	43.7	39	37	41	26.5
14	B980582	45.5	37	34	38	31.0
15	B980696	46.3	35	35	37	29.0
16	B980416	41.7	29	35	35	26.5
17	MD71-5	36.2	29	32	33	32.0
18	TX00D1626	40.0	33	35	33	28.5
19	TN04-01	45.3	34	40	37	32.5
20	AW D00-6383	43.5	35	37	36	31.0
21	AW D00*6874	44.5	34	38	37	30.0
22	AW D00*6847	39.4	37	34	34	29.5
23	NC00-15332	43.7	34	35	39	31.5
24	NC00-15385	39.4	36	30	32	28.5
25	NC00-15389	36.6	37	28	34	29.0
26	MD 11-52	35.4	38	28	32	25.5
27	MV 5-46	39.6	39	32	35	30.5
28	LA9585D17-2	42.5	39	35	35	29.5
29	LA925C104-1-3-B-4	40.6	38	34	35	28.5
30	B980006	45.7	37	38	35	32.0
31	G/F 951208-2E35	40.4	37	32	33	28.5
32	G/F 951079-2E31	45.1	37	35	37	28.0
33	G/F 95652-2E56	40.7	35	31	33	28.5
34	F/G 95195	40.9	37	35	37	30.5
35	F/G 951216-2E14	42.7	34	33	37	29.5
36	F/G 951216-2E26	44.3	39	34	34	31.0
37	SC996284	47.2	32	39	40	34.5
38	SC996289	50.0	32	40	39	36.5
39	G39015	45.3	31	34	39	33.0
40	G39033	46.1	32	40	39	32.5
41	P92226E2-5-3-2	37.2	37	28	32	27.5
42	P961341A3-2-2	38.8	34	31	36	30.5
LOCATION MEANS		41.9	35.5	34.0	35.5	30.3

HEIGHT (inches)

		Blacksburg VA	Warsaw VA	ENTRY MEANS ALL LOCATIONS	rank
1	AGS 2000	34	32	36.9	13
2	USG 3209	31	29	33.4	33
3	Pioneer 26R61	33	34	37.5	10
4	McCormick	29	29	33.1	35
5	AR910-9-1	32	34	38.3	6
6	NC99-13022	30	31	33.6	31
7	VA00W-526	29	29	32.1	39
8	VA98W-335	27	28	31.2	41
9	VAN98W-342	28	28	31.8	40
10	VA98W-631	30	31	34.6	25
11	LA9560CA22-1	32	35	38.5	4
12	AR93035-4-1	31	34	37.1	12
13	SC980890	34	34	38.0	7
14	B980582	30	32	37.2	11
15	B980696	31	31	36.6	15
16	B980416	28	29	34.7	24
17	MD71-5	28	29	32.2	38
18	TX00D1626	28	30	34.2	28
19	TN04-01	32	32	38.0	8
20	AW D00-6383	30	30	36.2	19
21	AW D00*6874	31	31	36.2	20
22	AW D00*6847	32	31	35.0	23
23	NC00-15332	32	32	36.5	16
24	NC00-15385	31	29	33.1	36
25	NC00-15389	31	29	33.1	34
26	MD 11-52	26	27	30.9	42
27	MV 5-46	30	31	34.3	27
28	LA9585D17-2	32	35	36.6	14
29	LA925C104-1-3-B-4	31	29	34.1	30
30	B980006	32	32	37.6	9
31	G/F 951208-2E35	32	29	33.4	32
32	G/F 951079-2E31	32	32	36.4	18
33	G/F 95652-2E56	32	31	34.4	26
34	F/G 95195	33	34	36.5	17
35	F/G 951216-2E14	34	33	35.7	22
36	F/G 951216-2E26	34	32	36.1	21
37	SC996284	38	35	38.8	2
38	SC996289	37	35	39.4	1
39	G39015	35	34	38.4	5
40	G39033	32	33	38.8	3
41	P92226E2-5-3-2	28	28	32.4	37
42	P961341A3-2-2	29	31	34.2	29
LOCATION MEANS		31.2	31.4	35.4	

LODGING

		Belle Mina AL	DeWitt AR	Stuttgart AR	Georgetown DE	Quincy FL
		0-9	0-9	0-9	0-9	0-9
1	AGS 2000	0		0	1	0.5
2	USG 3209	0		0	1	0.5
3	Pioneer 26R61	0		0	1	0.0
4	McCormick	0		1	1	0.0
5	AR910-9-1	0		0	1	1.5
6	NC99-13022	0		0	1	0.0
7	VA00W-526	0		0	1	0.0
8	VA98W-335	0		0	1	0.0
9	VAN98W-342	0		0	1	0.0
10	VA98W-631	0		0	1	1.5
11	LA9560CA22-1	0		0	1	3.0
12	AR93035-4-1	0		0	1	2.0
13	SC980890	0	3.7	4	1	2.0
14	B980582	0	1.5	0	1	1.5
15	B980696	0	3.0	0	1	0.0
16	B980416	0	3.0	1	1	0.5
17	MD71-5	0		0	1	0.5
18	TX00D1626	0		0	1	1.0
19	TN04-01	0		0	1	0.0
20	AW D00-6383	0		0	1	0.0
21	AW D00*6874	0		0	1	0.0
22	AW D00*6847	0		0	1	0.0
23	NC00-15332	0		0	1	0.0
24	NC00-15385	0		0	1	1.5
25	NC00-15389	0	1.5	0	1	1.5
26	MD 11-52	0		0	1	0.0
27	MV 5-46	0		0	1	0.5
28	LA9585D17-2	0		0	1	1.0
29	LA925C104-1-3-B-4	0	5.0	3	1	3.5
30	B980006	0	1.0	0	1	0.0
31	G/F 951208-2E35	0	5.5	2	1	0.5
32	G/F 951079-2E31	0	2.0	3	1	2.5
33	G/F 95652-2E56	0	2.0	0	1	1.0
34	F/G 95195	0	2.0	1	1	0.5
35	F/G 951216-2E14	0		1	1	0.0
36	F/G 951216-2E26	0		0	1	0.5
37	SC996284	0		1	1	2.5
38	SC996289	0	2.0	2	1	1.5
39	G39015	0		0	1	0.0
40	G39033	0		0	1	0.0
41	P92226E2-5-3-2	0		0	1	0.0
42	P961341A3-2-2	0		0	1	0.0
LOCATION MEANS		0		0.5	1.0	0.8
GROWTH STAGE / DATE						

LODGING

		Evansville	Lafayette		Logan Co.	Woodford Co.
		IN	IN		KY	KY
		0-9	0-9	0-9	0-9	0-9
1	AGS 2000	7.5	1	1	1	5
2	USG 3209	7.5	1	2	3	9
3	Pioneer 26R61	5.0	1	1	0	5
4	McCormick	4.5	1	3	5	9
5	AR910-9-1	6.0	1	1	0	4
6	NC99-13022	5.5	1	1	0	4
7	VA00W-526	6.0	1	2	0	9
8	VA98W-335	6.0	4	5	0	8
9	VAN98W-342	5.5	1	1	0	9
10	VA98W-631	7.5	1	1	0	5
11	LA9560CA22-1	5.5	1	1	0	8
12	AR93035-4-1	4.5	1	1	0	2
13	SC980890	8.5	4	6	9	9
14	B980582	6.0	2	2	0	9
15	B980696	5.5	1	2	0	7
16	B980416	9.0	3	6	1	9
17	MD71-5	3.0	1	1	0	8
18	TX00D1626	4.5	1	1	0	4
19	TN04-01	8.0	1	3	0	4
20	AW D00-6383	5.0	1	2	0	2
21	AW D00*6874	5.5	1	1	0	6
22	AW D00*6847	5.5	1	3	0	5
23	NC00-15332	5.5	1	3	0	0
24	NC00-15385	5.5	1	1	0	5
25	NC00-15389	5.5	1	1	0	7
26	MD 11-52	3.5	4	7	0	9
27	MV 5-46	5.5	2	4	0	8
28	LA9585D17-2	5.0	2	3	0	0
29	LA925C104-1-3-B-4	8.5	7	8	5	9
30	B980006	6.0	2	5	0	9
31	G/F 951208-2E35	6.0	5	5	0	9
32	G/F 951079-2E31	7.5			1	9
33	G/F 95652-2E56	6.5	1	2	0	8
34	F/G 95195	6.5	1	3	0	7
35	F/G 951216-2E14	6.5	1	4	0	6
36	F/G 951216-2E26	7.0	1	2	0	9
37	SC996284	8.5	2	3	0	8
38	SC996289	6.0	4	6	7	9
39	G39015	5.5	2	6	1	4
40	G39033	7.5	2	5	0	5
41	P92226E2-5-3-2	4.5	1	1	0	0
42	P961341A3-2-2	5.5	1	1	0	3
LOCATION MEANS		6.0	1.8	2.9	0.8	6.3
GROWTH STAGE / DATE			early	late		

LODGING

		Baton Rouge LA	Portageville MO	Cleveland MS	Newton MS	Blacksburg VA
		0-9	0-9	0-9	0-9	0.2-10
1	AGS 2000	2.5	3.7	1.5	2	0.2
2	USG 3209	2.0	3.3	3.0	2	1.6
3	Pioneer 26R61		2.7	3.0	0	0.2
4	McCormick	0.5	7.3	4.0	0	0.2
5	AR910-9-1	0.5	2.7	1.0	3	0.4
6	NC99-13022	0.5	3.0	0.0	0	0.4
7	VA00W-526	0.0	3.0	0.0	0	0.2
8	VA98W-335	0.0	4.7	2.5	0	0.2
9	VAN98W-342	0.5	4.7	1.0	0	0.2
10	VA98W-631	0.5	5.0	0.0	0	0.2
11	LA9560CA22-1	2.5	2.0	0.0	0	0.2
12	AR93035-4-1	0.5	3.3	0.0	0	0.2
13	SC980890	2.5	5.7	6.7	4	0.2
14	B980582	2.5	3.3	3.0	2	0.8
15	B980696	0.0	3.3	4.0	0	0.4
16	B980416	3.0	5.0	2.5	0	0.8
17	MD71-5	0.0	3.7	3.0	0	0.2
18	TX00D1626	0.0	4.7	1.0	0	0.2
19	TN04-01	0.0	3.3	2.0	0	0.2
20	AW D00-6383	0.0	3.7	0.0	0	0.2
21	AW D00*6874	1.0	3.3	2.5	0	0.2
22	AW D00*6847	0.0	5.3	0.0	0	0.2
23	NC00-15332	0.5	2.3	0.0	2	0.2
24	NC00-15385	2.0	4.0	3.5	0	0.4
25	NC00-15389	1.0	3.3	3.0	0	0.4
26	MD 11-52	1.0	2.7	0.0	4	0.2
27	MV 5-46	1.0	2.7	1.5	4	0.4
28	LA9585D17-2	1.5	2.7	1.0	2	0.2
29	LA925C104-1-3-B-4	6.0	3.7	6.5	6	1.2
30	B980006	0.0	3.7	0.0	0	0.4
31	G/F 951208-2E35	2.0	5.3	7.0	0	0.4
32	G/F 951079-2E31	6.0	4.7	7.0	6	0.8
33	G/F 95652-2E56	1.0	4.0	4.0	4	0.2
34	F/G 95195	1.0	3.3	3.0	0	0.4
35	F/G 951216-2E14	1.0	4.3	4.0	2	0.2
36	F/G 951216-2E26	0.5	5.7	1.5	0	0.2
37	SC996284	3.0	2.7	3.5	0	0.8
38	SC996289	2.5	2.3	4.5	0	2.4
39	G39015	0.5	3.0	0.0	0	0.8
40	G39033	0.5	2.7	0.0	2	0.8
41	P92226E2-5-3-2	0.0	3.7	0.0	0	0.2
42	P961341A3-2-2	0.0	4.3	1.5	0	0.2
LOCATION MEANS		1.2	3.8	2.2	1.1	0.4
GROWTH STAGE / DATE						

LODGING

		Warsaw VA	OVERALL RANK
		0.2-10	
1	AGS 2000	0.6	25
2	USG 3209	0.2	34
3	Pioneer 26R61	0.2	9
4	McCormick	0.2	36
5	AR910-9-1	0.3	14
6	NC99-13022	0.2	5
7	VA00W-526	0.2	13
8	VA98W-335	0.2	30
9	VAN98W-342	0.2	18
10	VA98W-631	0.2	16
11	LA9560CA22-1	0.2	19
12	AR93035-4-1	0.2	3
13	SC980890	2.8	41
14	B980582	0.3	32
15	B980696	0.2	22
16	B980416	1.3	37
17	MD71-5	0.2	11
18	TX00D1626	0.2	7
19	TN04-01	0.2	15
20	AW D00-6383	0.2	2
21	AW D00*6874	0.2	12
22	AW D00*6847	0.2	10
23	NC00-15332	0.2	3
24	NC00-15385	0.2	21
25	NC00-15389	0.2	20
26	MD 11-52	0.2	31
27	MV 5-46	0.2	28
28	LA9585D17-2	0.2	8
29	LA925C104-1-3-B-4	0.7	42
30	B980006	0.2	23
31	G/F 951208-2E35	0.2	38
32	G/F 951079-2E31	0.5	40
33	G/F 95652-2E56	0.2	33
34	F/G 95195	0.3	26
35	F/G 951216-2E14	0.2	29
36	F/G 951216-2E26	0.2	27
37	SC996284	0.2	35
38	SC996289	0.6	39
39	G39015	0.2	17
40	G39033	0.2	24
41	P92226E2-5-3-2	0.2	1
42	P961341A3-2-2	0.2	6

LOCATION MEANS 0.3
GROWTH STAGE / DATE

WINTER SURVIVAL

		Belle Mina	Bay	Evansville	
		AL	AR	IN	
		Winter Kill	Freeze Damage	Winter Survival	Freeze Severity
		0-9	1-9	%	0-9
1	AGS 2000	0	4.0	80	6.5
2	USG 3209	0	3.0	98	3.0
3	Pioneer 26R61	0	2.7	100	1.0
4	McCormick	0	3.3	100	1.5
5	AR910-9-1	0	2.7	100	3.0
6	NC99-13022	0	4.0	85	6.5
7	VA00W-526	0	4.0	88	6.0
8	VA98W-335	0	3.0	100	2.5
9	VAN98W-342	0	3.0	100	2.0
10	VA98W-631	0	4.0	98	2.5
11	LA9560CA22-1	0	3.7	75	6.5
12	AR93035-4-1	0	2.3	100	0.8
13	SC980890	0	5.0	70	7.0
14	B980582	0	2.0	100	2.0
15	B980696	0	2.7	100	1.0
16	B980416	0	2.3	100	1.0
17	MD71-5	0	3.3	100	2.5
18	TX00D1626	0	2.7	100	1.5
19	TN04-01	0	3.0	100	1.5
20	AW D00-6383	0	3.3	100	2.5
21	AW D00*6874	0	3.0	100	2.0
22	AW D00*6847	0	3.7	98	3.5
23	NC00-15332	0	3.0	100	2.0
24	NC00-15385	0	3.7	83	6.0
25	NC00-15389	0	3.3	80	6.5
26	MD 11-52	0	3.7	100	1.5
27	MV 5-46	0	3.3	93	4.5
28	LA9585D17-2	0	5.0	75	7.0
29	LA925C104-1-3-B-4	0	2.7	93	4.0
30	B980006	0	2.3	100	0.8
31	G/F 951208-2E35	0	3.0	100	3.0
32	G/F 951079-2E31	0	3.3	95	4.0
33	G/F 95652-2E56	0	4.0	85	6.0
34	F/G 95195	0	4.3	90	5.5
35	F/G 951216-2E14	0	3.7	93	5.0
36	F/G 951216-2E26	0	4.0	88	5.5
37	SC996284	0	4.0	100	3.5
38	SC996289	0	4.0	95	4.0
39	G39015	0	2.7	100	0.8
40	G39033	0	2.3	100	1.0
41	P92226E2-5-3-2	0	3.3	100	2.0
42	P961341A3-2-2	0	2.0	100	1.0
LOCATION MEANS		0.0	3.3	94.2	3.3

WINTER SURVIVAL

		Greensburg	Logan Co.	Woodford Co.
		IN	KY	KY
		Winter Kill	Winter Kill	Winter Kill
		1-9	0-9	0-9
1	AGS 2000	2	0	0
2	USG 3209	2	0	0
3	Pioneer 26R61	2	0	0
4	McCormick	1	0	0
5	AR910-9-1	1	0	0
6	NC99-13022	6	0	0
7	VA00W-526	2	0	0
8	VA98W-335	1	0	0
9	VAN98W-342	1	0	0
10	VA98W-631	1	0	0
11	LA9560CA22-1	2	0	0
12	AR93035-4-1	1	0	0
13	SC980890	3	0	0
14	B980582	1	0	0
15	B980696	1	0	0
16	B980416	1	0	0
17	MD71-5	1	0	0
18	TX00D1626	1	0	0
19	TN04-01	2	0	0
20	AW D00-6383	1	0	0
21	AW D00*6874	1	0	0
22	AW D00*6847	1	0	0
23	NC00-15332	1	0	0
24	NC00-15385	1	0	0
25	NC00-15389	1	0	0
26	MD 11-52	8	0	0
27	MV 5-46	8	0	0
28	LA9585D17-2	1	0	0
29	LA925C104-1-3-B-4	4	0	0
30	B980006	9**	0	0
31	G/F 951208-2E35	2	0	0
32	G/F 951079-2E31	1	0	0
33	G/F 95652-2E56	1	0	0
34	F/G 95195	1	0	0
35	F/G 951216-2E14	2.5	0	0
36	F/G 951216-2E26	2.5	0	0
37	SC996284	1	0	0
38	SC996289	2.5	0	0
39	G39015	1	0	0
40	G39033	1	0	0
41	P92226E2-5-3-2	1	0	0
42	P961341A3-2-2	1	0	0
LOCATION MEANS		2.0	0.0	0.0

LEAF RUST

		Belle Mina	Bay	Quincy	Woodford Co.	Baton Rouge
		AL	AR	FL	KY	LA
		0-9		0-9	% flag	%
1	AGS 2000	0	1.0	0.0	1	0
2	USG 3209	0	2.7	1.5	2	3
3	Pioneer 26R61	0	3.7	1.0	2	
4	McCormick	0	2.3	0.0	1	15
5	AR910-9-1	0	3.0	1.0	2	3
6	NC99-13022	0	2.3	0.0	0	0
7	VA00W-526	0	3.0	1.0	1	0
8	VA98W-335	0	2.0	2.0	1	1
9	VAN98W-342	0	3.0	0.0	1	0
10	VA98W-631	0	3.0	3.0	1	4
11	LA9560CA22-1	0	1.3	0.0	1	0
12	AR93035-4-1	0	4.3	2.0	2	5
13	SC980890	0	3.3	1.0	5	2
14	B980582	0	3.3	0.0	5	0
15	B980696	0	2.0	0.0	2	0
16	B980416	0	4.3	1.0	1	0
17	MD71-5	0	2.0	2.0	1	0
18	TX00D1626	0	1.7	0.0	6	0
19	TN04-01	0	2.3	0.0	1	0
20	AW D00-6383	0	4.0	3.0	1	0
21	AW D00*6874	0	5.0	2.0	2	2
22	AW D00*6847	3	5.0	3.0	2	8
23	NC00-15332	0	2.7	0.0	2	0
24	NC00-15385	0	3.0	0.5	0	0
25	NC00-15389	0	2.0	0.5	1	1
26	MD 11-52	0	2.3	0.5	2	0
27	MV 5-46	2	3.7	2.0	1	0
28	LA9585D17-2	0	1.3	0.0	0	0
29	LA925C104-1-3-B-4	0	3.3	0.0	0	0
30	B980006	3	3.0	0.5	25	0
31	G/F 951208-2E35	0	1.3	0.0	2	0
32	G/F 951079-2E31	0	2.0	0.5	1	0
33	G/F 95652-2E56	0	2.0	0.0	1	0
34	F/G 95195	0	1.7	0.5	0	0
35	F/G 951216-2E14	0	2.0	0.0	0	0
36	F/G 951216-2E26	0	3.0	1.0	1	0
37	SC996284	2	3.0	0.5	1	1
38	SC996289	0	2.3	0.5	1	0
39	G39015	0	1.7	0.5	5	0
40	G39033	0	3.7	2.0	1	3
41	P92226E2-5-3-2	0	7.3	3.5	2	5
42	P961341A3-2-2	0	2.0	0.0	1	0
LOCATION MEANS		0.2	2.8	0.9	2.1	1.2
GROWTH STAGE / DATE				27-Apr		

LEAF RUST

		Cleveland MS	Prosper TX	Blacksburg VA
		0-9	%	0-9
1	AGS 2000	?	3.3	0
2	USG 3209	4	0.0	4
3	Pioneer 26R61	3	0.0	0
4	McCormick	7	11.7	1
5	AR910-9-1	2	0.0	0
6	NC99-13022	3.5	0.0	1
7	VA00W-526	3	0.0	1
8	VA98W-335	?	0.0	0
9	VAN98W-342	?	0.0	0
10	VA98W-631	4	8.3	2
11	LA9560CA22-1	1.5	0.0	0
12	AR93035-4-1	3	5.0	2
13	SC980890	?	3.3	0
14	B980582	1	6.7	0
15	B980696	6	0.0	4
16	B980416	?	10.0	3
17	MD71-5	?	0.0	0
18	TX00D1626	?	0.0	0
19	TN04-01	?	0.0	2
20	AW D00-6383	?	0.0	4
21	AW D00*6874	4.5	3.3	2
22	AW D00*6847	7	3.3	2
23	NC00-15332	1.5	0.0	0
24	NC00-15385	?	0.0	0
25	NC00-15389	1	0.0	0
26	MD 11-52	?	0.0	0
27	MV 5-46	?	0.0	4
28	LA9585D17-2	?	0.0	0
29	LA925C104-1-3-B-4	?	0.0	0
30	B980006	2.5	1.7	1
31	G/F 951208-2E35	1	0.0	0
32	G/F 951079-2E31	1	3.3	0
33	G/F 95652-2E56	1.5	0.0	0
34	F/G 95195	3	20.0	0
35	F/G 951216-2E14	1	0.0	0
36	F/G 951216-2E26	2.7	0.0	0
37	SC996284	1	0.0	0
38	SC996289	1	0.0	0
39	G39015	1.5	11.7	1
40	G39033	1	8.3	2
41	P92226E2-5-3-2	7.5	1.7	6
42	P961341A3-2-2	?	1.7	0
LOCATION MEANS		2.8	2.5	1.0
GROWTH STAGE / DATE		5-May		

LEAF RUST

Blacksburg
VA

		LR 04 TNRJ	LR 04 MCRK		LR 04 TNRJ	LR 04 MCRK
1	AGS 2000	0;R	;12	lr differential Tc Lr1	3S	3S
2	USG 3209	;1R	2;	lr differential Tc Lr2a	3S	0;R
3	Pioneer 26R61	;1=R	12;	lr differential Tc Lr2c	3S	;1-CR
4	McCormick	3S	;1	lr differential Tc Lr3a	3S	3S
5	AR910-9-1	23MS	2;	lr differential Tc Lr9	3S	0;R
6	NC99-13022	3S	0;	lr differential Tc Lr16	12=MR	;12-CNR
7	VA00W-526	3S	3S	lr differential Tc Lr24	3S	0;R
8	VA98W-335	0;R	;1	lr differential Tc Lr26	;1-R	23-MS
9	VAN98W-342	;1=R	;12	lr differential Tc Lr3ka	3S	3S
10	VA98W-631	3S	2;	lr differential Tc Lr11	3S	3S
11	LA9560CA22-1	3S	0;1	lr differential Tc Lr17	;12MR	;12-CR
12	AR93035-4-1	3S	3S	lr differential Tc Lr30	3S	3S
13	SC980890	3S	0;	lr differential Tc Lr18	;1-R	3C
14	B980582	3S	0;1	lr differential Tc Lr14a	3S	3S
15	B980696	23;l	;12	lr differential Tc Lr10	3S	3S
16	B980416	3S	3S	lr differential Tc LrB	;12-MR	;12CR
17	MD71-5	;1-R	;12			
18	TX00D1626	23MS	0;		12/4/2003	12/19/2003
19	TN04-01	;1-R	0;			
20	AW D00-6383	3S	3S			
21	AW D00*6874	3S	3S			
22	AW D00*6847	3S	3S/TR0;			
23	NC00-15332	3S/0;R	0;1			
24	NC00-15385	12MR	;1			
25	NC00-15389	12MR/TRS	0;1-			
26	MD 11-52	0;R	12;			
27	MV 5-46	;1R/TRS	2;			
28	LA9585D17-2	;1R	0;			
29	LA925C104-1-3-B-4	3S	0;			
30	B980006	3S	3S			
31	G/F 951208-2E35	;1R	;12			
32	G/F 951079-2E31	12MR	2;			
33	G/F 95652-2E56	23MS	;1			
34	F/G 95195	23l	;1			
35	F/G 951216-2E14	1R	;1			
36	F/G 951216-2E26	;23MRI	;12			
37	SC996284	3S	;12			
38	SC996289	3S	;12			
39	G39015	0;R/TRS	0;	Treated seed		
40	G39033	0;1R	;1	Treated seed		
41	P92226E2-5-3-2	S/0;R	23;			
42	P961341A3-2-2	;1=R	;1			
GROWTH STAGE / DATE		12/4/2003	12/19/2003			

LEAF RUST

St. Paul, MN
Reactions produced by NA race*

		CBMT**	MCDS	MCRK	KBBG	TCTD	TNRJ	TLGK	TFBJ	THBJ	Postulated Genes***
1	AGS 2000	;2-3	;	3	;	;	;	;	;1c	;1c	10,11,26
2	USG 3209	;	;	3	;	3	;1c	;	;	;	11,26
3	Pioneer 26R61	;	;1c	3	;1c	3-;	;	;	;1c	;1c	11,26
4	McCormick	;	;	;	;1c	;	3	-	3	-	24,+
5	AR910-9-1	;	3	3-;	3-;	3	3-;	-3	3	;1c3	+
6	NC99-13022	-	;	-	;	;	3	;	;	;	11,24
7	VA00W-526	2-;	3	3	;	3	3	-3	3	3	1,+
8	VA98W-335	;	;	;1c	;	3	;	;	;	;	2a,11,26
9	VAN98W-342	2-;	;1c	;	;	3	;	;	;	;	2a,11,26
10	VA98W-631	;1c	-3	;1c3	2+	3	;1c2	;1c	3,2c	23;	+
11	LA95600CA22-1	;	;	;	;	;	3	;	;	;	11,24
12	AR93035-4-1	-3	;1c	23;	;	;	3	;1c	23;	;1c2	+
13	SC980890	-3	;	;	;	;	3	;	3	;	24,+
14	B980582	;	;	;	;	;	3	3	;	;	9,+
15	B980696	;3	23;	3,1c	;	;	23;	2c;	2;	;1c3	+
16	B980416	;	23;	3,1c	;	3	;2c	;2c	23;	;1c-3	2a,11,26
17	MD 71-5	;1c	;1	;	;	3	;	;	;	;1c	2a,11,26
18	TX 00D1626	;1c	;	;	;1c	3	3	;1c2	;	;	2a,11
19	TN04-01	;	;	;	;	3	;1c	;	;	;	2a,11,26
20	AW D00-6383	3-;	3	3	;	;2c	3	3	3	3	1,10
21	AW D00*6874	;	;	;	;	;	3	3	;	;	9,+
22	AW D00*6847	;	;lc	3	;	;	2;	3	;	;	1,10,18
23	NC00-15332	;	;	;	;	;	;2c	;	;	;	+
24	NC00-15385	;	;	;	;	;	;2c	;2c	;	;	+
25	NC00-15389	-3	;	;	;	;	;	;1c	;	;	+
26	MD 11-52	;1c	;1c	3	;	;	;	;	;	;	18,26,+
27	MV 5-46	;1c	23;	;1c-3	;	3	;1c	;	3-j	3	2a,26
28	LA9585D17-2	;	;	;	;	;	;	;	;	;	+
29	LA925C104-1-3-B-4	;	;	;	;	;	3	3	;	;	9,+
30	B980006	3	3	3	3	3	3	3	3	3	0
31	G/F 951208-2E35	;	;	;1c	;	;	;	;1c	;	;	+
32	G/F 951208-2E35	3-;	;	3-1c;	;	;	;	;1c	;	;1c	+
33	G/F95652-2E56	;	;1c	;	;	-	;1c	;1c	;1c	;	+
34	F/G 95195	;	;	;1c2	;	;2	;2	;2c	;	;1c	+
35	F/G 95195	;	;	;	;	;	;	;1c	;	;	+
36	F/G 951216-2E26	;	;	;1c	;	-3	;1c	;1c	;	;	+
37	SC996284	;	;1c	3	;1c	;	23;	23;	;1c	;	+
38	SC996289	;	;1c	3	;1c	3	3;	3;	;	;1c	11,+
39	G39015	;	;	;	;	;	;	;	;	;	+
40	G39033	;	;	;	;	;	;	;	;	;	+
41	P92226E2-5-3-2	;	;	3	;	3	3;	;1c-3	3	3	26,+
42	P961341A3-2-2	;1c	3-;	;	;	3-;	;	;	;1c	;1c	+

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

**Virulence formula:

CBMT=3,3ka,10,14a,18,30,B

MCDS=1,3,3ka,10,14a,17,26,B

MCRK=1,3,3ka,10,11,14a,18,26,30

KBBG=2a,2c,3,10

TCTD=1,2a,2c,3,3ka,11,14a,17,26,30

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

TLGK=1,2a,2c,3,9,10,11,14a,18

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

THBJ=1,2a,2c,3,10,14a,16,26

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

Note: MCDS, MCRK, TNRJ and THBJ were the most commonly found races in the U.S. in 2003.

STRIPE RUST

		Fayetteville AR	Baton Rouge LA	Cleveland MS		Prosper TX
		%	%	0-9	0-9	
1	AGS 2000	50.0	1	5.2	6.5	1.3
2	USG 3209	17.3	1	3.2	3.4	0.7
3	Pioneer 26R61	0.7		1.0	1.2	0.0
4	McCormick	5.7	0	2.0	3.0	0.0
5	AR910-9-1	0.0	0	1.3	1.3	0.0
6	NC99-13022	15.7	1	3.0	3.0	0.3
7	VA00W-526	1.3	0	1.5	2.0	0.3
8	VA98W-335	64.3	1	4.5	7.2	4.7
9	VAN98W-342	77.7	3	5.4	8.5	7.3
10	VA98W-631	10.7	0	1.0	2.2	0.0
11	LA9560CA22-1	15.7	0	1.5	4.2	0.3
12	AR93035-4-1	8.0	3	2.2	4.0	0.3
13	SC980890	50.0	2	4.2	5.7	0.7
14	B980582	30.7	0	3.5	4.8	1.0
15	B980696	0.7	0	1.0	1.2	0.0
16	B980416	38.3	0	2.5	5.2	1.3
17	MD71-5	84.3	4	6.2	8.5	8.3
18	TX00D1626	73.3	3	4.4	6.7	4.7
19	TN04-01	63.3	0	4.5	6.4	3.3
20	AW D00-6383	68.3	3	6.3	8.2	3.7
21	AW D00*6874	5.3	1	1.7	2.0	0.3
22	AW D00*6847	22.3	0	3.5	4.2	0.7
23	NC00-15332	6.3	0	2.9	3.2	0.0
24	NC00-15385	56.7	0	4.5	5.7	1.7
25	NC00-15389	63.3	1	4.0	4.7	2.3
26	MD 11-52	63.3	0	3.2	6.0	2.7
27	MV 5-46	70.0	1	5.5	8.0	5.0
28	LA9585D17-2	73.3	2	5.3	7.4	5.0
29	LA925C104-1-3-B-4	31.7	0	3.4	6.7	5.0
30	B980006	0.0	0	1.3	2.5	0.0
31	G/F 951208-2E35	0.0	0	1.0	1.0	0.0
32	G/F 951079-2E31	4.7	0	1.0	1.2	0.0
33	G/F 95652-2E56	2.3	0	1.2	1.7	0.0
34	F/G 95195	2.0	3	1.0	3.7	0.0
35	F/G 951216-2E14	0.0	0	1.2	1.0	0.0
36	F/G 951216-2E26	0.0	0	1.0	1.2	0.0
37	SC996284	3.0	0	1.2	2.7	0.0
38	SC996289	1.3	0	1.2	2.2	0.0
39	G39015	0.7	0	1.5	1.7	0.0
40	G39033	1.3	0	1.4	2.5	0.0
41	P92226E2-5-3-2	1.3	0	1.0	1.0	0.0
42	P961341A3-2-2	56.7	1	2.0	5.3	2.0
LOCATION MEANS		27.2	0.7	2.7	4.0	1.5
GROWTH STAGE / DATE				Early April	5-May	

STRIPE RUST

Pullman
WA

		% severity	IT 0-2-5-8
1	AGS 2000	90	8
2	USG 3209	80	8
3	Pioneer 26R61	2	8
4	McCormick	40	8
5	AR910-9-1	20	8
6	NC99-13022	60	5
7	VA00W-526	2	8
8	VA98W-335	100	8
9	VAN98W-342	100	8
10	VA98W-631	80	8
11	LA9560CA22-1	70	8
12	AR93035-4-1	80	8
13	SC980890	100	8
14	B980582	90	8
15	B980696	0	0
16	B980416	100	8
17	MD71-5	100	8
18	TX00D1626	100	8
19	TN04-01	100	8
20	AW D00-6383	100	8
21	AW D00*6874	2	8
22	AW D00*6847	20	8
23	NC00-15332	40	8
24	NC00-15385	90	8
25	NC00-15389	90	8
26	MD 11-52	100	8
27	MV 5-46	100	8
28	LA9585D17-2	100	8
29	LA925C104-1-3-B-4	90	8
30	B980006	80	5
31	G/F 951208-2E35	2	8
32	G/F 951079-2E31	5	8
33	G/F 95652-2E56	5	8
34	F/G 95195	50	8
35	F/G 951216-2E14	2	8
36	F/G 951216-2E26	2	8
37	SC996284	50	8
38	SC996289	70	8
39	G39015	30	8
40	G39033	20	8
41	P92226E2-5-3-2	10	8
42	P961341A3-2-2	90	8
LOCATION MEANS		58.6	7.7
GROWTH STAGE / DATE		30-Jun	30-Jun

STRIPE RUST

Mt. Vernon
WA

		% severity	IT 0-2-5-8	% severity	IT 0-2-5-8
1	AGS 2000	20	8	100	8
2	USG 3209	5	2	10	2
3	Pioneer 26R61	2	2	2	2
4	McCormick	60	8	100	8
5	AR910-9-1	5	2	90	5
6	NC99-13022	40	5,8	90	5
7	VA00W-526	15	3	10	2
8	VA98W-335	20	5	100	8
9	VAN98W-342	40	8	100	8
10	VA98W-631	15	3	80	5
11	LA9560CA22-1	80	8	100	8
12	AR93035-4-1	10	3	10	2
13	SC980890	15	5	80	8
14	B980582	60	8	100	8
15	B980696	2	2	2	2
16	B980416	80	8	100	8
17	MD71-5	40	8	100	8
18	TX00D1626	40	8	100	8
19	TN04-01	10	3	100	8
20	AW D00-6383	40	8	100	8
21	AW D00*6874	5	2	5	2
22	AW D00*6847	5	2	10	2
23	NC00-15332	10	2,8	10	2
24	NC00-15385	60	8	80	8
25	NC00-15389	60	8	80	8
26	MD 11-52	20	5	100	8
27	MV 5-46	60	8	100	8
28	LA9585D17-2	80	8	100	8
29	LA925C104-1-3-B-4	20	5	90	5
30	B980006	20	8	90	8
31	G/F 951208-2E35	5	2	10	5
32	G/F 951079-2E31	60	8	100	8
33	G/F 95652-2E56	5	2	5	2
34	F/G 95195	10	2,8	5	2
35	F/G 951216-2E14	40	5	100	8
36	F/G 951216-2E26	10	2,8	30	5
37	SC996284	5	2	100	8
38	SC996289	20	8	100	8
39	G39015	20	5	100	8
40	G39033	20	5	100	8
41	P92226E2-5-3-2	40	8	100	8
42	P961341A3-2-2	20	8	100	8
LOCATION MEANS		28.4		71.2	6.1
GROWTH STAGE / DATE		23-Apr	23-Apr	4-Jun	4-Jun

SEPTORIA

		Belle Mina	Lafayette
		AL	IN
		tritici	tritici
1	AGS 2000	2.5	3
2	USG 3209	1.0	3
3	Pioneer 26R61	2.0	2
4	McCormick	2.0	5
5	AR910-9-1	2.0	4
6	NC99-13022	2.0	2
7	VA00W-526	2.0	2
8	VA98W-335	2.0	4
9	VAN98W-342	2.0	4
10	VA98W-631	3.0	2
11	LA9560CA22-1	2.0	3
12	AR93035-4-1	2.0	4
13	SC980890	2.0	6
14	B980582	3.0	5
15	B980696	2.0	4
16	B980416	2.5	4
17	MD71-5	2.0	4
18	TX00D1626	2.0	3
19	TN04-01	2.0	4
20	AW D00-6383	2.0	3
21	AW D00*6874	2.0	4
22	AW D00*6847	2.0	3
23	NC00-15332	2.0	2
24	NC00-15385	3.0	2
25	NC00-15389	3.0	2
26	MD 11-52	2.0	3
27	MV 5-46	2.5	4
28	LA9585D17-2	2.5	2
29	LA925C104-1-3-B-4	2.0	4
30	B980006	2.0	3
31	G/F 951208-2E35	2.5	5
32	G/F 951079-2E31	2.0	
33	G/F 95652-2E56	2.0	3
34	F/G 95195	2.0	3
35	F/G 951216-2E14	2.5	4
36	F/G 951216-2E26	2.0	4
37	SC996284	1.0	3
38	SC996289	2.0	3
39	G39015	2.0	5
40	G39033	3.0	5
41	P92226E2-5-3-2	2.0	3
42	P961341A3-2-2	2.5	2
LOCATION MEANS		2.2	3.4

FUSARIUM HEAD BLIGHT (SCAB)

		Bay AR	Evansville IN inoculated severity (%)	Greensburg IN 1-5
1	AGS 2000	6.0	74.9	2.5
2	USG 3209	3.7	37.2	2.5
3	Pioneer 26R61	5.7	81.4	5.0
4	McCormick	2.7	27.2	2.5
5	AR910-9-1	5.0	63.7	2.5
6	NC99-13022	6.0	87.0	5.0
7	VA00W-526	3.0	14.7	4.0
8	VA98W-335	4.3	50.0	3.5
9	VAN98W-342	4.7	47.4	3.0
10	VA98W-631	4.7	96.8	4.5
11	LA9560CA22-1	4.7	68.0	3.0
12	AR93035-4-1	3.0	69.5	3.5
13	SC980890	6.0	83.5	3.0
14	B980582	2.3	22.2	1.0
15	B980696	2.3	18.0	2.5
16	B980416	2.0	28.0	1.5
17	MD71-5	5.0	64.1	3.0
18	TX00D1626	3.3	27.0	3.0
19	TN04-01	4.0	34.5	2.0
20	AW D00-6383	3.3	55.6	3.5
21	AW D00*6874	3.7	70.2	2.0
22	AW D00*6847	4.0	85.9	2.5
23	NC00-15332	3.3	57.3	3.0
24	NC00-15385	4.7	18.3	2.0
25	NC00-15389	3.7	24.0	2.5
26	MD 11-52	6.0	45.1	5.0
27	MV 5-46	4.3	23.9	2.5
28	LA9585D17-2	3.7	58.4	3.5
29	LA925C104-1-3-B-4	3.7	33.7	4.0
30	B980006	3.0	34.8	3.5
31	G/F 951208-2E35	4.3	42.6	2.5
32	G/F 951079-2E31	4.7	32.2	3.0
33	G/F 95652-2E56	4.3	30.3	4.0
34	F/G 95195	5.3	60.2	3.0
35	F/G 951216-2E14	4.7	61.6	3.0
36	F/G 951216-2E26	5.0	28.5	2.5
37	SC996284	3.3	86.9	2.0
38	SC996289	4.0	54.1	2.0
39	G39015	3.7	33.5	2.0
40	G39033	3.7	52.8	2.0
41	P92226E2-5-3-2	3.0	29.6	2.5
42	P961341A3-2-2	3.3	11.7	3.0
LOCATION MEANS		4.1	48.2	2.9
GROWTH STAGE / DATE				10.6

FUSARIUM HEAD BLIGHT (SCAB)

		Lafayette IN		Woodford Co. KY
				%FDK
1	AGS 2000	8	8	47.7
2	USG 3209	5	6	15.4
3	Pioneer 26R61	8	8	34.1
4	McCormick	3	4	11.7
5	AR910-9-1	5	7	9.8
6	NC99-13022	7	8	66.7
7	VA00W-526	3	5	40.5
8	VA98W-335	6	6	16.6
9	VAN98W-342	5	6	16.1
10	VA98W-631	6	7	3.5
11	LA9560CA22-1	6	7	3.1
12	AR93035-4-1	6	6	30.6
13	SC980890	6	7	5.6
14	B980582	2	2	17.1
15	B980696	3	3	8.1
16	B980416	3	4	31.9
17	MD71-5	5	5	0.7
18	TX00D1626	2	4	2.9
19	TN04-01	5	5	3.5
20	AW D00-6383	5	5	18.7
21	AW D00*6874	3	3	2.7
22	AW D00*6847	5	6	6.6
23	NC00-15332	6	6	10.7
24	NC00-15385	7	7	13.1
25	NC00-15389	7	7	6.6
26	MD 11-52	7	8	7.2
27	MV 5-46	6	7	5.2
28	LA9585D17-2	4	7	12.1
29	LA925C104-1-3-B-4	5	6	22.8
30	B980006	4	6	27.3
31	G/F 951208-2E35	7	8	9.3
32	G/F 951079-2E31			3.3
33	G/F 95652-2E56	7	7	7.0
34	F/G 95195	7	8	20.0
35	F/G 951216-2E14	6	7	24.4
36	F/G 951216-2E26	6	6	16.8
37	SC996284	6	6	13.0
38	SC996289	6	6	6.9
39	G39015	3	4	25.0
40	G39033	4	4	7.3
41	P92226E2-5-3-2	3	3	0.7
42	P961341A3-2-2	5	7	2.2
LOCATION MEANS		5.2	5.9	15.1
GROWTH STAGE / DATE		early	late	

POWDERY MILDEW

		Belle Mina AL	Plains GA	Lafayette IN	Woodford Co. KY	Baton Rouge LA
					0-9	0-9
1	AGS 2000	0	0	2	4	0.0
2	USG 3209	0	3	1	3	0.0
3	Pioneer 26R61	0	5	1	4	
4	McCormick	0	0	1	3	0.0
5	AR910-9-1	0	0	1	3	0.0
6	NC99-13022	0	0	1	3	0.0
7	VA00W-526	0	0	1	2	0.0
8	VA98W-335	0	0	1	2	0.0
9	VAN98W-342	0	0	1	2	0.0
10	VA98W-631	0	0	1	4	0.0
11	LA9560CA22-1	0	7	3	5	0.0
12	AR93035-4-1	0	5	5	5	0.5
13	SC980890	0	0	3	5	0.0
14	B980582	0	5	2	5	0.0
15	B980696	0	0	2	4	0.0
16	B980416	0	0	1	4	0.0
17	MD71-5	0	0	1	2	0.0
18	TX00D1626	0	1	2	4	0.5
19	TN04-01	0	1	3	4	0.0
20	AW D00-6383	0	0	3	4	0.0
21	AW D00*6874	0	0	2	4	0.0
22	AW D00*6847	0	8	3	5	0.0
23	NC00-15332	0	0	2	4	0.0
24	NC00-15385	0	3	2	3	0.0
25	NC00-15389	0	1	3	2	0.0
26	MD 11-52	0	0	1	2	0.0
27	MV 5-46	0	0	1	3	0.0
28	LA9585D17-2	0	3	2	3	0.0
29	LA925C104-1-3-B-4	0	5	2	2	0.0
30	B980006	0	0	5	5	0.0
31	G/F 951208-2E35	0	0	1	4	0.0
32	G/F 951079-2E31	0	0	1	3	0.0
33	G/F 95652-2E56	0	1	3	5	0.0
34	F/G 95195	0	0	2	3	0.0
35	F/G 951216-2E14	0	0	2	3	0.0
36	F/G 951216-2E26	0	5	3	5	1.0
37	SC996284	0	0	1	2	0.0
38	SC996289	0	0	1	2	0.0
39	G39015	0	1	5	6	0.0
40	G39033	0	5	4	5	0.0
41	P92226E2-5-3-2	0	0	1	3	0.0
42	P961341A3-2-2	0	0	2	5	0.0
LOCATION MEANS		0.0	1.4	2.0	3.6	0.0

POWDERY MILDEW

		Kinston NC	Wooster OH	OVERALL RANK
			0-9	
1	AGS 2000	2.0	1.7	21
2	USG 3209	2.5	1.0	23
3	Pioneer 26R61	2.0	1.0	33
4	McCormick	1.5	0.0	9
5	AR910-9-1	5.5	1.7	26
6	NC99-13022	1.0	0.0	8
7	VA00W-526	1.0	0.0	3
8	VA98W-335	0.5	0.3	2
9	VAN98W-342	1.0	0.0	3
10	VA98W-631	3.0	0.7	17
11	LA9560CA22-1	5.0	3.3	37
12	AR93035-4-1	6.0	4.3	42
13	SC980890	2.0	2.7	29
14	B980582	3.0	2.3	35
15	B980696	3.5	2.3	27
16	B980416	4.0	0.3	20
17	MD71-5	0.5	0.0	1
18	TX00D1626	4.0	2.3	31
19	TN04-01	4.0	2.3	32
20	AW D00-6383	3.0	2.0	28
21	AW D00*6874	2.0	1.0	18
22	AW D00*6847	5.5	3.0	40
23	NC00-15332	2.5	0.7	19
24	NC00-15385	2.5	0.3	24
25	NC00-15389	2.0	0.3	16
26	MD 11-52	1.0	0.3	7
27	MV 5-46	1.5	0.0	9
28	LA9585D17-2	2.0	0.3	22
29	LA925C104-1-3-B-4	1.5	0.3	24
30	B980006	5.0	5.0	36
31	G/F 951208-2E35	1.5	0.0	12
32	G/F 951079-2E31	3.0	0.3	14
33	G/F 95652-2E56	4.5	2.0	34
34	F/G 95195	2.0	0.7	15
35	F/G 951216-2E14	1.0	1.0	13
36	F/G 951216-2E26	7.0	3.3	39
37	SC996284	1.0	0.0	3
38	SC996289	1.0	0.0	3
39	G39015	5.5	6.0	38
40	G39033	6.0	4.7	41
41	P92226E2-5-3-2	2.0	0.3	11
42	P961341A3-2-2	4.0	2.0	30
LOCATION MEANS		2.8	1.4	

POWDERY MILDEW

Blacksburg VA

PM 04 COMP			PM 04 COMP		
1	AGS 2000	2MR	pm differential Chancellor	-	4S
2	USG 3209	0R	pm differential Axminster	Pm 1	0R
3	Pioneer 26R61	0R	pm differential C68-15*7/CI 13836	Pm 1	0R
4	McCormick	0R	pm differential Ulka	Pm 2	23INS
5	AR910-9-1	3MS	pm differential Asosan	Pm 3a	4S
6	NC99-13022	0R	pm differential Chul	Pm 3b	2I
7	VA00W-526	0R	pm differential Sonora*	Pm 3c	34MS
8	VA98W-335	0R	pm differential C68-15*6/Sonora	Pm 3c	34MS/0R
9	VAN98W-342	0R	pm differential C68-15*6/Trit	Pm 3c	4S/0R
10	VA98W-631	34S/1R	pm differential Michigan Amber	Pm 3f	4S
11	LA9560CA22-1	4S	pm differential Yuma	Pm 4a	4S
12	AR93035-4-1	4S	pm differential C68-15*5/Yuma	Pm 4a	4S/1R
13	SC980890	23IMS	pm differential C68-15*5/Kapli	Pm 4a	34MS
14	B980582	4S	pm differential Ronos	Pm 4b	4S
15	B980696	34S	pm differential Hope	Pm 5	2I?
16	B980416	34S	pm differential C747*	Pm 6	4S
17	MD71-5	0R	pm differential Transec*	Pm 7	4S
18	TX00D1626	4S	pm differential C68-15*7/Transec	Pm 7	0R
19	TN04-01	34MS	pm differential Federation/Kavkaz	Pm 8	2I?
20	AW D00-6383	4S	pm differential Amigo	Pm 17	0R/2plts S
21	AW D00*6874	4S	pm differential C68-15*5//747/Amigo	Pm 17	4S
22	AW D00*6847	23I			
23	NC00-15332	3MS			12/18/2003
24	NC00-15385	23I			
25	NC00-15389	23MSI			
26	MD 11-52	0R			
27	MV 5-46	12MR			
28	LA9585D17-2	23IMS			
29	LA925C104-1-3-B-4	23IMS			
30	B980006	4S			
31	G/F 951208-2E35	4S			
32	G/F 951079-2E31	34S			
33	G/F 95652-2E56	4S			
34	F/G 95195	23IMS			
35	F/G 951216-2E14	12MR			
36	F/G 951216-2E26	4S			
37	SC996284	0R/TRS			
38	SC996289	0R			
39	G39015	23MSI	Treated seed		
40	G39033	4S	Treated seed		
41	P92226E2-5-3-2	34S			
42	P961341A3-2-2	0R/S			

GROWTH STAGE / DATE 12/18/2003

POWDERY MILDEW

		Raleigh NC Isolate													Probable <i>Pm</i> gene(s)
		1	2	3	4	5	6	7	8	9	10	11	12	13	
1	AGS 2000	I	R	S	S	S	S	R	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
2	USG 3209	R	R	S	R	R	R	R	R	R	S	S	R	I	3c, 3e, 3f, 5a, 6, 7, 8, 9
3	Pioneer 26R61	R	R	S	R	R	R	R	R	R	R	R	S	R	2a, 3f, 5a, 7, 8, 9
4	McCormick	R	R	R	R	R	R	R	R	R	S	S	I	S	3c, 7, 8, 17
5	AR910-9-1	S	S	S	S	S	R	S	R	S	I	S	S	R	3f, 5a, 7
6	NC99-13022	R	I	S	R	I	I	R	R	I	S	S	S	S	7, 8
7	VA00W-526	R	R	R	R	I	R	R	R	I	S	S	I	S	3c, 7, 8, 17
8	VA98W-335	R	R	I	R	R	R	R	R	R	R	R	R	R	no virulent isolates
9	VAN98W-342	R	R	R	R	R	R	R	R	R	R	R	R	R	no virulent isolates
10	VA98W-631	R	R	R	R	R	R	R	R	R	S	S	R	R	3f, 4b, 5a, 6, 7, 8, 9, 17
11	LA9560CA22-1	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
12	AR93035-4-1	S	S	S	S	S	S	S	S	S	S	S	S	S	no avirulent isolates
13	SC980890	S	S	S	S	S	S	S	S	S	S	S	S	S	no avirulent isolates
14	B980582	S	S	S	S	S	S	S	R	S	S	S	I	R	3e, 3f, 5a, 6, 7
15	B980696	S	S	S	S	S	S	S	R	S	S	S	S	S	7
16	B980416	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
17	MD71-5	R	R	R	R	R	R	R	R	R	R	R	R	R	no virulent isolates
18	TX00D1626	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
19	TN04-01	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
20	AW D00-6383	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
21	AW D00*6874	S	S	S	S	S	S	S	S	S	S	S	S	S	no avirulent isolates
22	AW D00*6847	R	R	R	S	S	S	S	R	R	R	S	R	R	3b, 3e, 3f, 5a, 6, 7
23	NC00-15332	S	I	S	S	S	S	S	R	R	I	S	S	S	7
24	NC00-15385	S	R	S	S	I	S	R	R	I	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
25	NC00-15389	S	S	I	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
26	MD 11-52	S	S	R	S	S	I	S	R	R	R	R	S	R	3f, 5a, 7
27	MV 5-46	R	R	R	R	R	S	R	R	R	R	R	R	R	1b, 3c, 3e, 3f, 5a, 6, 8, 9
28	LA9585D17-2	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
29	LA925C104-1-3-B-4	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
30	B980006	S	S	S	S	S	S	S	R	S	S	S	S	S	7
31	G/F 951208-2E35	R	R	R	R	R	R	R	R	R	R	R	R	R	no virulent isolates
32	G/F 951079-2E31	S	R	R	R	R	R	S	R	R	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
33	G/F 95652-2E56	S	S	S	S	S	S	S	S	S	S	S	S	S	no avirulent isolates
34	F/G 95195	S	S	R	S	S	S	S	R	R	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
35	F/G 951216-2E14	S	S	S	S	S	S	S	S	S	S	S	R	R	3e, 3f, 5a
36	F/G 951216-2E26	S	S	S	S	S	S	S	R	S	R	R	R	R	3a, 3e, 3f, 5a, 6, 7
37	SC996284	R	R	S	S	R	R	R	S	R	S	S	R	S	3c
38	SC996289	R	R	S	S	R	R	R	S	R	S	S	R	S	3c
39	G39015	R	R	R	R	R	R	S	R	R	S	S	R	R	3e, 3f, 5a, 6, 7, 8, 9
40	G39033	R	R	R	S	R	R	R	R	R	R	S	R	R	1c, 3e, 3f, 5a, 6, 7, 9, 17
41	P92226E2-5-3-2	R	R	R	R	R	R	R	R	R	S	S	R	R	3f, 4b, 5a, 6, 7, 8, 9, 17
42	P961341A3-2-2	S	S	S	S	R	R	R	R	S	S	S	S	S	7

See next page for avirulence/virulence combinations of each isolate. "No virulent isolates" indicates the cultivar or line was resistant (or intermediate) to the isolates tested and therefore has a *Pm* gene or allele (or combination) not represented in the differential set. "No avirulent isolates" indicates the cultivar or line was susceptible to all the isolates tested, and therefore does not contain any of the *Pm* genes or alleles tested. Only one isolate (#8) was avirulent on entry #15 (B980696) and entry #30 (B980006), so the probable presence of any *Pm* gene or allele in these entries is tentative.

POWDERY MILDEW

Raleigh NC

Isolate #	<i>Pm</i> Avirulence	<i>Pm</i> Virulence
1	1a, 2a, 3b, 3c, 4b, 8, 9, 16, 17, 25	3a, 3e, 3f, 5a, 6, 7
2	1a, 2a, 4b, 9, 16, 17, 25	3a, 3b, 3c, 3e, 3f, 5a, 6, 7, 8
3	1a, 3b, 4b, 17, 25	2a, 3a, 3c, 3e, 3f, 5a, 6, 7, 8, 9, 16
4	1a, 4b, 8, 16, 25	2a, 3a, 3b, 3c, 3e, 3f, 5a, 6, 7, 8, 17
5	1a, 2a, 4b, 9, 16, 17, 25	3a, 3b, 3c, 3e, 3f, 5a, 6, 7, 8
6	1a, 2a, 4b, 16, 17, 25	3a, 3b, 3c, 3e, 3f, 5a, 6, 7, 8, 9
7	1a, 2a, 3c, 4b, 16, 17, 25	3a, 3b, 3e, 3f, 5a, 6, 7, 8, 9
8	3a, 3b, 4b, 6, 7, 16, 17, 25	1a, 2a, 3c, 3e, 3f, 5a, 8, 9
9	1a, 3b, 3c, 4b, 9, 16, 17, 25	2a, 3a, 3e, 3f, 5a, 6, 7, 8
10	1a, 2a, 3a, 3b, 16, 25	3c, 3e, 3f, 4b, 5a, 6, 7, 8, 9, 17
11	1a, 2a, 3a, 16	3b, 3c, 3e, 3f, 4b, 5a, 6, 7, 8, 9, 17, 25
12	1a, 3a, 3b, 3c, 3e, 4b, 6, 16, 17, 25	2a, 3f, 5a, 7, 8, 9
13	3a, 3b, 3e, 3f, 4b, 5, 6, 9, 16, 25	1a, 2a, 3c, 7, 8, 17

A total of 16 *Pm* genes or alleles were evaluated: *Pm*1a, *Pm*2a, *Pm*3a, *Pm*3b, *Pm*3c, *Pm*3e, *Pm*3f, *Pm*4b, *Pm*5a, *Pm*6, *Pm*7, *Pm*8, *Pm*9, *Pm*16, *Pm*17, and *Pm*25.

BYDV

		Belle Mina AL	Griffin GA	Blacksburg VA	Warsaw VA
		% plants affected		0-9	0-9
1	AGS 2000	40	2	1	1
2	USG 3209	10	3	4	1
3	Pioneer 26R61	60	5	2	1
4	McCormick	25	3	2	1
5	AR910-9-1	60	3	4	3
6	NC99-13022	70	6	3	1
7	VA00W-526	50	5	2	2
8	VA98W-335	60	7	3	2
9	VAN98W-342	70	4	2	1
10	VA98W-631	25	3	3	2
11	LA9560CA22-1	25	2	2	1
12	AR93035-4-1	30	1	3	2
13	SC980890	50	2	4	2
14	B980582	25	5	2	2
15	B980696	10	6	4	1
16	B980416	20	2	2	1
17	MD71-5	70	5	4	1
18	TX00D1626	30	2	2	1
19	TN04-01	40	2	3	1
20	AW D00-6383	40	2	4	2
21	AW D00*6874	60	3	4	1
22	AW D00*6847	25	1	3	1
23	NC00-15332	40	2	6	3
24	NC00-15385	60	1	4	1
25	NC00-15389	95	2	5	2
26	MD 11-52	80	5	1	2
27	MV 5-46	10	3	3	1
28	LA9585D17-2	40	2	3	1
29	LA925C104-1-3-B-4	25	1	4	1
30	B980006	40	1	3	2
31	G/F 951208-2E35	40	3	3	2
32	G/F 951079-2E31	60	3	3	1
33	G/F 95652-2E56	50	7	6	3
34	F/G 95195	40	3	2	1
35	F/G 951216-2E14	40	5	6	3
36	F/G 951216-2E26	25	7	4	3
37	SC996284	70	4	3	2
38	SC996289	10	5	6	1
39	G39015	25	3	5	2
40	G39033	50	1	4	3
41	P92226E2-5-3-2	10	5	2	2
42	P961341A3-2-2	20	2	1	0
LOCATION MEANS		41.1	3.3	3.3	1.6

WSSV

		Clay Co. AR	Warsaw VA
		0-9	0-9
1	AGS 2000	5.0	2.7
2	USG 3209	1.3	0.0
3	Pioneer 26R61	0.0	0.0
4	McCormick	0.0	0.0
5	AR910-9-1	3.0	0.0
6	NC99-13022	0.3	0.0
7	VA00W-526	1.7	0.0
8	VA98W-335	0.3	0.0
9	VAN98W-342	0.0	0.0
10	VA98W-631	0.0	0.0
11	LA9560CA22-1	2.7	0.0
12	AR93035-4-1	0.0	0.9
13	SC980890	4.0	0.0
14	B980582	0.0	0.0
15	B980696	1.0	0.0
16	B980416	0.7	0.0
17	MD71-5	0.0	0.0
18	TX00D1626	2.7	0.0
19	TN04-01	0.7	0.0
20	AW D00-6383	3.7	0.0
21	AW D00*6874	4.3	7.2
22	AW D00*6847	2.7	0.0
23	NC00-15332	2.7	0.0
24	NC00-15385	3.3	0.0
25	NC00-15389	3.3	0.0
26	MD 11-52	0.0	0.0
27	MV 5-46	4.0	0.9
28	LA9585D17-2	3.0	0.0
29	LA925C104-1-3-B-4	2.3	0.0
30	B980006	1.7	0.0
31	G/F 951208-2E35	2.0	0.0
32	G/F 951079-2E31	3.7	0.0
33	G/F 95652-2E56	4.3	2.7
34	F/G 95195	4.0	0.0
35	F/G 951216-2E14	4.3	0.0
36	F/G 951216-2E26	4.3	1.8
37	SC996284	4.7	1.8
38	SC996289	4.3	4.5
39	G39015	3.0	1.8
40	G39033	1.3	0.0
41	P92226E2-5-3-2	4.0	0.0
42	P961341A3-2-2	0.3	0.0
LOCATION MEANS		2.3	0.6
GROWTH STAGE / DATE		22-Mar	

DISEASE COMPLEXES

		Keiser	Jackson Co.	Kibler
		AR	AR	AR
		Soil borne & Spindle Streak	Soil borne & Spindle Streak	Foliar diseases
		0-9	0-9	% leaf area
1	AGS 2000	5.7	1.7	77.7
2	USG 3209	0.0	0.3	43.3
3	Pioneer 26R61	0.0	0.0	20.0
4	McCormick	0.0	0.0	17.3
5	AR910-9-1	0.0	0.0	31.7
6	NC99-13022	0.0	0.0	31.7
7	VA00W-526	0.0	1.0	30.0
8	VA98W-335	0.0	0.7	85.3
9	VAN98W-342	0.0	0.0	96.3
10	VA98W-631	0.0	1.3	25.0
11	LA9560CA22-1	6.3	4.3	43.3
12	AR93035-4-1	0.0	1.0	43.3
13	SC980890	1.3	1.0	82.7
14	B980582	0.3	0.0	56.7
15	B980696	0.7	1.7	30.0
16	B980416	0.0	0.7	55.0
17	MD71-5	0.3	0.3	94.7
18	TX00D1626	2.0	0.0	61.7
19	TN04-01	0.7	0.7	80.0
20	AW D00-6383	2.0	0.0	75.0
21	AW D00*6874	0.7	0.3	45.0
22	AW D00*6847	0.7	0.3	57.7
23	NC00-15332	0.3	0.0	50.0
24	NC00-15385	0.3	0.3	72.7
25	NC00-15389	0.0	0.3	84.3
26	MD 11-52	0.0	0.0	84.3
27	MV 5-46	1.0	1.3	87.7
28	LA9585D17-2	7.0	2.7	66.7
29	LA925C104-1-3-B-4	4.0	2.0	80.0
30	B980006	0.3	0.0	30.0
31	G/F 951208-2E35	0.7	0.0	56.7
32	G/F 951079-2E31	3.0	0.0	56.7
33	G/F 95652-2E56	3.0	0.7	63.3
34	F/G 95195	2.0	2.0	56.7
35	F/G 951216-2E14	3.0	1.7	55.0
36	F/G 951216-2E26	3.7	3.7	43.3
37	SC996284	5.0	2.7	25.0
38	SC996289	7.0	2.0	30.0
39	G39015	0.0	0.0	43.3
40	G39033	0.0	0.0	30.0
41	P92226E2-5-3-2	1.3	0.0	9.7
42	P961341A3-2-2	0.5	0.0	36.7
LOCATION MEANS		1.5	0.8	53.5
GROWTH STAGE / DATE		23-Mar		7-May

HESSIAN FLY

		Biotype B	Biotype C	Biotype D	Biotype E	Biotype L
1	AGS 2000	1 - 14	0 - 14	0 - 16	2 - 13	0 - 18
2	USG 3209	9 - 7	0 - 16	0 - 18	16 - 2	0 - 16
3	Pioneer 26R61	0 - 14	0 - 15	0 - 14	12 - 0	0 - 14
4	McCormick	0 - 19	0 - 17	0 - 15	4 - 13	0 - 12
5	AR910-9-1	0 - 16	0 - 16	0 - 18	0 - 19	0 - 15
6	NC99-13022	0 - 17	0 - 14	0 - 8	0 - 17	0 - 14
7	VA00W-526	0 - 12	0 - 17	0 - 16	0 - 15	0 - 19
8	VA98W-335	0 - 15	9 - 4	0 - 17	0 - 19	0 - 18
9	VAN98W-342	0 - 12	11 - 2	0 - 15	0 - 16	0 - 13
10	VA98W-631	0 - 15	14 - 2	0 - 19	0 - 17	0 - 16
11	LA9560CA22-1	5 - 11	11 - 0	17 - 0	13 - 0	0 - 14
12	AR93035-4-1	0 - 20	0 - 15	0 - 15	12 - 2	0 - 12
13	SC980890	15 - 0	13 - 0	15 - 0	20 - 0	19 - 0
14	B980582	0 - 16	0 - 13	0 - 14	0 - 16	0 - 13
15	B980696	0 - 19	13 - 1	0 - 13	0 - 18	0 - 19
16	B980416	11 - 2	16 - 0	17 - 0	18 - 0	0 - 18
17	MD71-5	0 - 15	10 - 6	0 - 17	0 - 14	0 - 14
18	TX00D1626	8 - 9	0 - 15	0 - 17	19 - 0	0 - 19
19	TN04-01	0 - 18	0 - 15	0 - 12	0 - 14	0 - 17
20	AW D00-6383	12 - 3	0 - 14	0 - 16	14 - 1	0 - 15
21	AW D00*6874	0 - 14	0 - 15	0 - 16	0 - 14	0 - 19
22	AW D00*6847	0 - 14	0 - 14	0 - 16	0 - 18	0 - 14
23	NC00-15332	0 - 15	0 - 13	0 - 14	14 - 2	0 - 14
24	NC00-15385	0 - 17	0 - 16	0 - 19	0 - 14	0 - 18
25	NC00-15389	0 - 17	0 - 15	0 - 17	1 - 12	0 - 17
26	MD 11-52	0 - 17	0 - 12	0 - 16	3 - 12	0 - 18
27	MV 5-46	0 - 17	0 - 12	0 - 17	0 - 12	0 - 16
28	LA9585D17-2	0 - 13	0 - 11	0 - 12	0 - 13	0 - 13
29	LA925C104-1-3-B-4	0 - 17	0 - 12	0 - 14	0 - 14	0 - 17
30	B980006	0 - 19	0 - 12	0 - 19	0 - 15	0 - 18
31	G/F 951208-2E35	19 - 0	14 - 0	21 - 0	15 - 0	17 - 0
32	G/F 951079-2E31	20 - 0	14 - 0	20 - 0	18 - 0	15 - 0
33	G/F 95652-2E56	0 - 14	0 - 13	0 - 16	17 - 2	0 - 19
34	F/G 95195	0 - 16	0 - 11	0 - 17	14 - 3	0 - 20
35	F/G 951216-2E14	0 - 15	12 - 0	0 - 14	0 - 12	0 - 19
36	F/G 951216-2E26	0 - 17	0 - 9	0 - 16	0 - 16	0 - 20
37	SC996284	13 - 1	0 - 12	15 - 0	16 - 1	16 - 0
38	SC996289	15 - 1	0 - 12	19 - 0	17 - 0	18 - 0
39	G39015	15 - 1	0 - 10	0 - 15	16 - 1	0 - 17
40	G39033	14 - 2	2 - 12	0 - 18	17 - 0	0 - 14
41	P92226E2-5-3-2	12 - 0	0 - 12	13 - 0	15 - 0	14 - 0
42	P961341A3-2-2	0 - 13		12 - 0	13 - 0	0 - 11

ACID SOIL TOLERANCE

		Enid OK
		1-5
1	AGS 2000	
2	USG 3209	
3	Pioneer 26R61	
4	McCormick	2
5	AR910-9-1	
6	NC99-13022	4
7	VA00W-526	
8	VA98W-335	
9	VAN98W-342	
10	VA98W-631	
11	LA9560CA22-1	
12	AR93035-4-1	
13	SC980890	
14	B980582	
15	B980696	
16	B980416	
17	MD71-5	
18	TX00D1626	
19	TN04-01	1
20	AW D00-6383	1
21	AW D00*6874	2
22	AW D00*6847	2
23	NC00-15332	1
24	NC00-15385	5
25	NC00-15389	3
26	MD 11-52	5
27	MV 5-46	2
28	LA9585D17-2	3
29	LA925C104-1-3-B-4	4
30	B980006	2
31	G/F 951208-2E35	4
32	G/F 951079-2E31	3
33	G/F 95652-2E56	2
34	F/G 95195	4
35	F/G 951216-2E14	3
36	F/G 951216-2E26	3
37	SC996284	2
38	SC996289	2
39	G39015	2
40	G39033	2
41	P92226E2-5-3-2	4
42	P961341A3-2-2	2

GROWTH STAGE / DATE

28-May

PHENOTYPE

		Baton Rouge LA
		0-9
1	AGS 2000	3.8
2	USG 3209	3.8
3	Pioneer 26R61	
4	McCormick	4.5
5	AR910-9-1	4.0
6	NC99-13022	4.3
7	VA00W-526	4.0
8	VA98W-335	5.3
9	VAN98W-342	5.0
10	VA98W-631	4.3
11	LA9560CA22-1	4.5
12	AR93035-4-1	4.3
13	SC980890	4.8
14	B980582	5.0
15	B980696	4.8
16	B980416	5.3
17	MD71-5	4.8
18	TX00D1626	4.3
19	TN04-01	4.5
20	AW D00-6383	4.3
21	AW D00*6874	4.5
22	AW D00*6847	5.5
23	NC00-15332	3.3
24	NC00-15385	5.0
25	NC00-15389	5.3
26	MD 11-52	5.3
27	MV 5-46	4.0
28	LA9585D17-2	3.8
29	LA925C104-1-3-B-4	3.5
30	B980006	4.5
31	G/F 951208-2E35	4.5
32	G/F 951079-2E31	4.3
33	G/F 95652-2E56	4.5
34	F/G 95195	4.3
35	F/G 951216-2E14	3.5
36	F/G 951216-2E26	4.0
37	SC996284	4.3
38	SC996289	4.5
39	G39015	5.0
40	G39033	4.5
41	P92226E2-5-3-2	4.5
42	P961341A3-2-2	4.3
LOCATION MEANS		4.5

1RS STATUS

Lincoln
NE

1	AGS 2000	1BL.1RS
2	USG 3209	1BL.1RS
3	Pioneer 26R61	1BL.1RS
4	McCormick	1AL.1RS
5	AR910-9-1	Non.1RS
6	NC99-13022	1AL.1RS
7	VA00W-526	1AL.1RS
8	VA98W-335	1BL.1RS
9	VAN98W-342	1BL.1RS
10	VA98W-631	Non.1RS
11	LA9560CA22-1	Non.1RS
12	AR93035-4-1	Non.1RS
13	SC980890	Non.1RS
14	B980582	Non.1RS
15	B980696	Non.1RS
16	B980416	Non.1RS
17	MD71-5	1BL.1RS
18	TX00D1626	Non.1RS
19	TN04-01	1BL.1RS
20	AW D00-6383	Non.1RS
21	AW D00*6874	Non.1RS
22	AW D00*6847	Non.1RS
23	NC00-15332	Non.1RS
24	NC00-15385	Non.1RS
25	NC00-15389	Non.1RS
26	MD 11-52	1BL.1RS
27	MV 5-46	1BL.1RS
28	LA9585D17-2	1BL.1RS
29	LA925C104-1-3-B-4	Non.1RS
30	B980006	Non.1RS
31	G/F 951208-2E35	Non.1RS
32	G/F 951079-2E31	Non.1RS
33	G/F 95652-2E56	Non.1RS
34	F/G 95195	1BL.1RS
35	F/G 951216-2E14	Non.1RS
36	F/G 951216-2E26	Non.1RS
37	SC996284	Non.1RS
38	SC996289	Non.1RS
39	G39015	Non.1RS
40	G39033	Non.1RS
41	P92226E2-5-3-2	Non.1RS
42	P961341A3-2-2	1BL.1RS

SPROUTING

	Prosper TX Sprouted Seed 0-5
1 AGS 2000	3
2 USG 3209	1
3 Pioneer 26R61	4
4 McCormick	0
5 AR910-9-1	2
6 NC99-13022	1
7 VA00W-526	0
8 VA98W-335	2
9 VAN98W-342	1
10 VA98W-631	0
11 LA9560CA22-1	1
12 AR93035-4-1	1
13 SC980890	1
14 B980582	1
15 B980696	0
16 B980416	0
17 MD71-5	1
18 TX00D1626	0
19 TN04-01	0
20 AW D00-6383	0
21 AW D00*6874	0
22 AW D00*6847	0
23 NC00-15332	1
24 NC00-15385	3
25 NC00-15389	2
26 MD 11-52	2
27 MV 5-46	0
28 LA9585D17-2	0
29 LA925C104-1-3-B-4	1
30 B980006	0
31 G/F 951208-2E35	2
32 G/F 951079-2E31	4
33 G/F 95652-2E56	0
34 F/G 95195	0
35 F/G 951216-2E14	0
36 F/G 951216-2E26	0
37 SC996284	0
38 SC996289	0
39 G39015	0
40 G39033	0
41 P92226E2-5-3-2	0
42 P961341A3-2-2	2
LOCATION MEANS	0.9

ADVANCED NURSERY EVALUATION FOR SOFT WHEAT MILLING AND BAKING QUALITY

LAB NO.			MILLING QUALITY SCORE	BAKING QUALITY SCORE		TEST WT. SCORE	SOFT. EQUIV. SCORE		MICRO T.W. LB/BU	
		Samples composited from Bay, AR; Stuttgart, AR; DeWitt, AR; Griffin, GA; Newton, MS; Warsaw, VA								
		STANDARD (#2576, AGS 2000)	85.9	A	61.5	C	79.70	B	63.10	C 63.0
2576	1	AGS 2000	85.9	A	61.5	C	79.70	B	63.10	C 63.0
2577	2	USG 3209	71.8	B	38.0	F	71.95	B	53.15	D 62.1
2578	3	Pioneer 26R61	71.2	B	42.3	E	81.56	A	55.39	D 63.3
2579	4	McCormick	75.1	B	48.5	E	82.74	A	61.94	C 63.4
2580	5	AR910-9-1	83.6	A	56.5	D	62.10	C	60.25	C 60.9 *
2581	6	NC99-13022	73.8	B	38.0	F	73.44	B	53.25	D 62.3
2582	7	VA00W-526	81.8	A	46.3	E	77.72	B	47.08	E 62.8
2583	8	VA98W-335	71.1	B	47.5	E	71.71	B	67.60	C 62.1
2584	9	VAN98W-342	71.4	B	39.8	F	62.85	C	70.27	B 61.0 *
2585	10	VA98W-631	74.6	B	34.0	F	64.46	C	52.32	D 61.2 *
2586	11	LA9560CA22-1	73.1	B	50.5	D	87.63	A	51.90	D 64.0
2587	12	AR93035-4-1	82.3	A	13.3	F	78.77	B	28.61	F 62.9
2588	13	SC980890	67.9	C	43.0	E	64.46	C	63.38	C 61.2 *
2589	14	B980582	71.7	B	46.5	E	79.51	B	55.57	D 63.0
2590	15	B980696	82.8	A	25.5	F	84.66	A	37.74	F 63.6
2591	16	B980416	74.1	B	57.0	D	71.77	B	60.59	C 62.1
2592	17	MD71-5	69.8	C	45.2	E	60.00	D	74.51	B 60.7 *
2593	18	TX00D1626	95.3	A	34.5	F	60.49	C	68.68	C 60.7 *
2594	19	TN04-01	77.3	B	38.5	F	92.15	A	58.61	D 64.5
2595	20	AW D00-6383	72.6	B	59.5	D	60.99	C	63.73	C 60.8 *
2596	21	AW D00*6874	64.7	C	49.0	E	76.04	B	64.89	C 62.6
2597	22	AW D00*6847	71.3	B	54.8	D	72.82	B	64.95	C 62.2
2598	23	NC00-15332	52.6	D	48.3	E	63.71	C	56.27	D 61.1 *
2599	24	NC00-15385	66.3	C	49.2	E	79.33	B	62.77	C 63.0
2600	25	NC00-15389	62.1	C	49.0	E	80.63	A	61.37	C 63.2
2601	26	MD 11-52	64.0	C	52.8	D	66.25	C	52.98	D 61.4 *
2602	27	MV 5-46	66.5	C	52.3	D	78.77	B	59.82	D 62.9
2603	28	LA9585D17-2	74.5	B	51.5	D	74.31	B	56.81	D 62.4
2604	29	LA925C104-1-3-B-4	69.8	C	47.0	E	79.64	B	64.95	C 63.0
2605	30	B980006	78.0	B	29.0	F	72.33	B	32.90	F 62.2
2606	31	G/F 951208-2E35	66.4	C	38.3	F	68.55	C	62.10	C 61.7 *
2607	32	G/F 951079-2E31	69.3	C	40.5	E	79.39	B	50.42	D 63.0
2608	33	G/F 95652-2E56	63.7	C	54.8	D	70.65	B	54.85	D 62.0
2609	34	F/G 95195	71.5	B	44.3	E	68.79	C	52.70	D 61.7 *
2610	35	F/G 951216-2E14	76.2	B	44.3	E	82.05	A	60.04	C 63.3
2611	36	F/G 951216-2E26	74.3	B	40.0	F	80.26	A	58.35	D 63.1
2612	37	SC996284	71.3	B	34.0	F	84.10	A	68.23	C 63.6
2613	38	SC996289	66.4	C	37.0	F	74.43	B	65.64	C 62.4
2614	39	G39015	75.3	B	72.0	B	70.34	B	61.77	C 61.9
2615	40	G39033	74.9	B	47.8	E	73.13	B	58.17	D 62.3
2616	41	P92226E2-5-3-2	69.3	C	48.5	E	55.97	D	74.82	B 60.2 Q
2617	42	P961341A3-2-2	66.3	C	58.5	D	62.10	C	54.50	D 60.9 *

ADVANCED NURSERY EVALUATION FOR SOFT WHEAT MILLING AND BAKING QUALITY

Samples composited from Bay, AR; Stuttgart, AR; DeWitt, AR; Griffin, GA; Newton, MS; Warsaw, VA		SOFT. EQUIV. %	FLOUR YIELD %		FLOUR PROT. %	LACTIC ACID RET'N	COOKIE DIAM. CM.	TOP GR.	
STANDARD (#2576, AGS 2000)		57.2		73.2		9.52	109.3	17.98	3
1	AGS 2000	57.2		73.2	Q	9.52	109.3	17.98	3
2	USG 3209	52.7	*	70.4	Q	8.93	116.8	17.04	Q 3
3	Pioneer 26R61	53.7	*	70.3	Q	10.02	118.1	17.21	Q 2
4	McCormick	56.6		71.1	Q	9.44	126.1	17.46	Q 3
5	AR910-9-1	55.9		72.8		9.26	120.6	17.78	2
6	NC99-13022	52.8	*	70.8	Q	9.65	136.0	17.04	Q 2
7	VA00W-526	50.0	Q	72.4	*	9.34	122.4	17.37	Q 3
8	VA98W-335	59.2		70.3	Q	9.42	112.9	17.42	Q 2
9	VAN98W-342	60.4		70.3	Q	10.08	100.6	17.11	Q 1
10	VA98W-631	52.4	*	71.0	Q	9.11	133.6	16.88	Q 1
11	LA9560CA22-1	52.2	*	70.7	Q	9.54	126.6	17.54	* 2
12	AR93035-4-1	41.8	Q	72.5		9.60	125.0	16.05	Q 2
13	SC980890	57.3		69.6	Q	10.02	139.2	17.24	Q 1
14	B980582	53.8	*	70.4	Q	10.28	130.8	17.38	Q 2
15	B980696	45.8	Q	72.6		9.40	136.5	16.54	Q 1
16	B980416	56.0		70.9	Q	8.92	123.8	17.8	4
17	MD71-5	62.2		70.0	Q	10.10	102.0	17.33	Q 1
18	TX00D1626	59.7		75.1		9.38	114.4	16.9	Q 1
19	TN04-01	55.2		71.5	Q	9.99	112.3	17.06	Q 1
20	AW D00-6383	57.4		70.6	Q	9.02	128.3	17.9	4
21	AW D00*6874	58.0		69.0	Q	9.65	124.4	17.48	Q 3
22	AW D00*6847	58.0		70.3	Q	8.79	128.5	17.71	* 3
23	NC00-15332	54.1		66.6	Q	8.82	112.4	17.45	Q 3
24	NC00-15385	57.0		69.3	Q	9.57	126.6	17.49	Q 1
25	NC00-15389	56.4		68.5	Q	10.01	122.6	17.48	Q 1
26	MD 11-52	52.6	*	68.9	Q	9.38	103.6	17.63	* 3
27	MV 5-46	55.7		69.3	Q	9.35	111.7	17.61	* 2
28	LA9585D17-2	54.4		70.9	Q	9.89	105.2	17.58	* 1
29	LA925C104-1-3-B-4	58.0		70.0	Q	9.47	152.0	17.4	Q 2
30	B980006	43.7	Q	71.7	*	9.45	139.6	16.68	Q 2
31	G/F 951208-2E35	56.7		69.3	Q	9.14	133.0	17.05	Q 2
32	G/F 951079-2E31	51.5	*	69.9	Q	9.39	137.6	17.14	Q 1
33	G/F 95652-2E56	53.5	*	68.8	Q	8.87	142.1	17.71	* 3
34	F/G 95195	52.5	*	70.4	Q	9.54	124.4	17.29	Q 2
35	F/G 951216-2E14	55.8		71.3	Q	9.56	137.0	17.29	Q 2
36	F/G 951216-2E26	55.0		70.9	Q	9.74	140.3	17.12	Q 1
37	SC996284	59.4		70.3	Q	9.64	143.3	16.88	Q 1
38	SC996289	58.3		69.3	Q	9.59	141.5	17	Q 1
39	G39015	56.6		71.1	Q	9.05	120.7	18.4	6
40	G39033	55.0		71.0	Q	9.40	126.3	17.43	Q 3
41	P92226E2-5-3-2	62.4		69.9	Q	8.65	138.0	17.46	Q 3
42	P961341A3-2-2	53.3	*	69.3	Q	9.28	92.6	17.86	4

2004 Crop Advanced Nursery Evaluation

Entries #2576 - #2617 USN Composites

There have been substantial changes to the Advanced Nursery Evaluation program, and those changes are described in a separate document. The standard data is compared to the "Historical Average" for the cultivar, and quality scores for all entries are adjusted to this average.

The samples in this nursery were compared to entry #2576, AGS 2000. Of the 700 cultivars in the SWQL data-base of Allis-milled cultivars, AGS 20000 ranked 16th for Milling Score, based on data from 5 Allis millings.

	Allis Data-base	Standard	Quad Data-base
Test Weight	63.8	63.0	61.53
Flour Yield	79.0	73.23	73.48
Break Flour	30.5		
E.S.I.	7.6		
Softness Equivalent	55.5	57.16	59.09
Friability	30.3		
Protein		9.52	
Ash	.39		
Cookie Diameter	17.9	17.98	17.96
A.W.R.C.	55.8		
Lactic Acid Retention	90	109.3	108.9
Mill Score	85.9	85.9	
Bake Score	61.5	61.5	
Test Wt. Score	79.7	79.7	
S.E. Score	63.1	63.1	

In the SWQL data-base of 345 Quad-Jr. millings, AGS 2000 ranked 19th for flour yield, based on data from 27 Quad millings.

The set of samples were “lightly” cleaned. After cleaning the samples were all in similar condition.

When compared to the “historical” Quad-Jr. data, the standard appeared to be very typical. The S.E. values were 2% lower for the 4 check varieties, when compared to the data from the quad data base.

The Milling Quality scores were good for the set, with 64% of the samples scoring an “A” or “B”. Only one entry, # 2598 (NC00-15332) scored below “C” for Milling Quality score.

The Baking Quality scores were low, with 71% of the samples scoring an “E” or “F”. No “A” scores, one “B” score #2614 (G39015) and one “C”, #2576 (AGS 2000).

The Test Weight scores were good for the set, with 69% of the samples scoring an “A” or “B”.

Notes on the 2003 revision of the Advanced Nursery Evaluation Program

There have been substantial changes made to the Advanced Nursery Evaluation, with the 2003 revision. Both the Milling and Baking Quality Scores are calculated in a different manner. Combined Quality Scores are no longer calculated, and there is no ranking by Combined Quality Score.

The Alkaline Water Retention Capacity (A.W.R.C.) test is no longer being run for Advanced Nursery samples. The A.W.R.C. test used to be 25% of the Baking Quality Scores, along with Softness Equivalent (25%) and Cookie Diameter (50%). With this version, the Baking Quality Score is calculated from the cookie diameter, and compared to the historical cookie diameter for the standard cultivar, from the SWQL Allis-Chalmers data-base.

The Milling Quality Score is calculated in the same manner as in previous versions, however, instead of weighing a test line against a standard with a Milling Score of 100, now the test line is compared to a standard with the same Milling Score as it has in the SWQL data-base of Allis-Chalmers millings.

In previous versions, the standard always had Milling and Baking Quality scores of 100, and the test lines were measured against this score. In the current version, the historical values, from the SWQL data-base of Allis Chalmers millings for the standard cultivar are used.

In the past, if a lenient standard cultivar was used, the test lines could receive high scores although they might have had poor quality attributes. For example, a cultivar might receive a high score when compared to a weak standard, and a low score if compared to a more stringent standard. With this revision, a test line should receive more consistent Milling and Baking Quality Scores, regardless of the standard used.

The assignment of Letter Scores is different, too:

"Old Scores"		"New Scores"	
100.0 and above	= "A"	80.0 and above	= "A"
95.9 – 99.9	= "B"	70.0 – 79.9	= "B"
90.0 – 94.9	= "C"	60.0 – 69.9	= "C"
85.0 – 89.9	= "D"	50.0 – 59.9	= "D"
80.0 – 84.9	= "E"	40.0 – 49.9	= "E"
Below 80.0	= "F"	Below 40.0	= "F"

The new Quality Scores are intended to represent the normal distribution of Mill Score and Cookie Diameter from the SWQL data-base of Allis-Chalmers millings.

Grain quality scores are now reported for Test Weight and Softness Equivalent (S.E.). These scores are calculated by normalizing the quality data to fit a scale of 100, and adjusting it according to the response of the standard. (The standard is compared to the historical data for that cultivar, and all entries are adjusted accordingly).

The letter scores associated with the grain quality scores are assigned in the same manner as they are for the Milling and Baking Quality Scores.

**The Evaluation of Advanced Nursery Cultivars and
Breeding Lines for Milling and Baking Quality
(Revised August, 2003)**

**USDA/ARS
Soft Wheat Quality Lab
Wooster, Ohio 44691**

Introduction

This cooperative program for the Eastern soft wheat breeding lines of the Advanced Nursery, provides for the evaluation of milling and baking quality potential. The evaluation consists of three parts: milling quality, baking quality, and grain quality scores.

Appraisals of the quality of test lines are made on a relative basis, comparing test line data with those of the control or standard cultivar. For that purpose, the reference cultivar entry should be harvested from plots in the same nursery and of the same size as those of the test lines in order that environmental effects may be minimized. When several standard cultivars are present in a nursery, we generally select as the reference one whose data indicates the highest quality score. By doing that, we hope to exert maximum quality pressure on the breeding lines.

The scores calculated for the standard are adjusted to approximate the historical values from the SWQL data-base of Allis-Chalmers millings. This correction is then used for the rest of the entries in the nursery, so that variations due to environment are minimalized.

Sample Testing Procedure

Evaluation requires at least 300-g samples with 500-g being desirable to allow cleaning to remove damaged or shriveled kernels. Because tests performed on abnormal kernels do not provide a valid measurement of quality potential, samples should be clean and essentially free of badly shriveled kernels, or of kernels damaged by insects or disease. Shriveled kernels are removed by aspiration.

A 200-g sample is then tempered for 48 hours to 15 ~ moisture and milled on a modified Quadrumat Jr. mill that has roll corrugations of 31, 36, 39, and 40 corrugations per inch and roll spacings of .040, .008, and .0035 inch. The ground wheat is collected and transferred to a Great Western sifter assembly containing a 40-mesh and a 94-mesh screen and sieved for 90 seconds. The overs of both sieves are weighed and used to calculate the flour yield and Softness Equivalent (SE).

The weight of the overs of the 40-mesh sieve is used to calculate the flour yield by using the following equation:

$$\text{YIELD} = [1 - (\text{OVER } 40 / \text{WHEAT WT.})] \times 100$$

In the same manner the weight of the overs of the 94-mesh sieve is used to calculate the softness equivalent (SE) by using the equation:

$$\text{SOFTNESS EQUIVALENT} = [1 - (\text{OVER } 94 / (\text{WHEAT WT.} - \text{OVER } 40))] \times 100$$

(2)

It has been found that with the simple milling procedure used, The flour yields can be affected by the inherent granulation of the wheat cultivar. Therefore, for every one percent change in S.E. there is a .17 % change in flour yield. The flour yields are adjusted to a 52 % S.E. (the mean of all cultivars) by the following equation:

$$\text{ADJ. FLOUR YIELD} = \{ \text{AS-IS FLOUR YIELD} - [.17 \times (52.0 - \text{S.E.})] \}$$

Then the overs of the 94-mesh sieve are passed through a second Quadrumat mill and sieved for 90 seconds over a 94-mesh sieve. The overs of the second milling are discarded and the thrus of the 94-mesh sieve from both millings are combined.

The recovered flour is then blended and used to determine moisture, protein, A.W.R.C., and baked into cookies. Moisture and protein are determined by NIR analysis, and a 1-g subsample is used to determine A.W.R.C. The Wooster Sugar-Snap Cookie Method requires an additional 40 g. of flour.

The additional milling step was added to produce a flour that would bake cookies similar in size and appearance to Allis-Chalmers milled flours.

Reference Values

The reference values are simply typical values for the respective tests that one would expect from a good quality soft wheat.

Least Significant Differences

The LSD values determine the size of score penalties for quality shortcomings. In making appraisals of breeding lines for milling and baking quality, we rely on least significant difference (LSD₀₅) values obtained in independent trials in determining whether a breeding line sample differs significantly from the standard cultivar in a given test.

These LSD values are valid only when the standard is equal to the reference value, however, and must be adjusted to compensate for deviation of the actual value from the reference value.

For example, the LSD₀₅ for adjusted yield is 0.79% at the reference value (73.59%). The adjusted LSD for a group of samples whose standard has an adjusted yield of 75% is calculated as follows:

(3)

$$LSD_{adj} = LSD_{.05} \left(\frac{ADJ. YIELD_s}{ADJ. YIELD_R} \right) \text{ or}$$

$$LSD_{adj} = (0.79\%) \underline{75.0} = .805\% \text{ (at 75\%)} \quad 73.6$$

where:

$ADJ. YIELD_s$ = adj. yield of standard cultivar

$ADJ. YIELD_p$ = reference value for add. yield

In the presentation of test data, the LSD values are used as a basis for identifying entries with specific quality deficiencies. Values that deviate (in the wrong direction) from the standard by one LSD are designated with an asterisk (*). Values that deviate by more than two LSD's are designated by a "Q".

The $LSD_{.05}$ for the tests are shown in the following table:

<u>Test</u>	<u>Reference Value</u>	<u>$LSD_{.05}$ at Reference Value</u>
Yield	73.6%	0.79%
Softness Equiv.	53.0	2.85
Test Weight	77.0 kg/hl	1.16 kg/hl
A.W.R.C.	52.0%	1.43%
Cookie Diam.	18.0 cm.	.24 cm.

Scoring levels

The number of points given per LSD variation from the standard is called the scoring level. The scoring levels were assigned by taking into consideration the range in variation for each test and the size of the LSD associated with the test.

Milling Quality Score

Milling Quality is based on flour yield from a 200-gram milling. High flour yield is associated with high straight-grade flour yield and with low endosperm separation index (ESI) in Allis-Chalmers milling, both indices of economic advantage in milling. The adjusted yield obtained from the Quadrumat Jr. milling correlates highly with Allis-Chalmers ESI and extraction. Therefore entries with high flour yield receive high Milling Quality Scores.

(4)

Milling quality score is based on the comparison of flour yield of an entry to the yield of the standard cultivar. i.e.

$$\text{Milling Quality Score} = (\text{MS Std}) - X \frac{(Y_s - Y_t)}{\text{LSD}}$$

Where MS Std is the Mill Score of the Standard Cultivar, from the SWQL data-base of Allis-Chalmers millings, Y_s and Y_t are flour yields of standard and test line, respectively. LSD is $\text{LSD}_{.05}$, for the test, and X is a coefficient calculated to change the score by 2.6 points for each L.S.D. variation. (A test line with adjusted yield one L.S.D. value lower than the standard yield thus will be penalized 2.6 points.)

Scoring for Baking Quality

A large cookie diameter leads to a high baking quality score. The cookie diameter becomes the Baking Quality Score when it is normalized to a scale of 0 – 100 by:

$$\text{Bake Score} = (25 \times \text{Predicted Cookie}) - 385$$

Finally, the Bake Score is adjusted to the standard by adding the difference between the Baking Score of the standard, and the Historical Baking Score of the standard, from the SWQL data-base.

Scoring for Grain Quality

A good soft wheat cultivar should have a high Softness Equivalent (S.E.) and a high Test Weight. High SE indicates friable endosperm, and it correlates highly with Allis-Chalmers break flour yield. High break flour yield is necessary for a finely granulated flour, which is in turn associated with large cake volume. The softness equivalent (SE) is also known to relate to kernel softness.

The Test Weight and S.E. scores are calculated by normalizing the quality data to fit a scale of 100. The scores are then adjusted to the standard by comparison to the historical data.

For example, the test weight adjustment factor is calculated by:

$$(\text{Test Weight}_{\text{Historical}}) - (\text{Test Weight}_{\text{Standard}})$$

Letter Scores:

For convenience of grouping entries, we assign letters to numerical scores as follows:

<u>Score Range</u>	<u>Letter Rating</u>
Over 79.9	A
70.0 - 79.9	B
60.0 - 69.9	C
50.0 - 59.9	D
40.0 - 49.9	E
Under 40.0	F

An Appeal for Prudence

We wish to call attention to the fact that this evaluation is on the basis of a single sample with single determinations, with no assurance that either the standard or the entry under test is truly representative of the genotype. Data and evaluation under this program should not be used as the sole basis for quality claims or for decisions on release.

An entry considered promising should be retested again, as further submissions under this program, or after multiplication as Regional Drill Plot and/or Uniform Nursery entry for more rigorous testing and evaluation.