

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE

and

Cooperating State Agricultural Experiment Stations

**2003-2004**

**UNIFORM BREAD WHEAT TRIAL**

**Final Report**

Coordinator: David Marshall

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This is a joint progress report of cooperative investigations underway in the Agricultural Research Service of the U. S. Department of Agriculture and the State Agricultural Experiment Stations 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. This report is primarily a tool for use by cooperators 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 and is not intended for publication and should not be referred to in literature citations or quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

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The purpose of the Uniform Bread Wheat Trial (UBWT) is to evaluate hard endosperm, bread quality, winter habit cultivars and advanced lines for adaptation to the high rainfall, humid environments of the eastern United States. The entries in this 2nd UBWT were selected from public and private breeding programs in the southern and central Great Plains. A total of 20 entries (15 hard red, 1 hard white, and 4 soft red) were included in the trial. There were 15 testing locations for the 2003-04 UBWT, with one in Georgia, four in North Carolina, three in Virginia, two in Kentucky, two in Maryland, and one in Pennsylvania.

The four soft wheat varieties yielded the highest, although the hard wheats, 'Lakin', 'TAM 110', TX98D1170, and TX99D4478 were in the same statistical group as 'AGS 2000', 'Roane', and 'Neuse'. 'Tribute' (SRW) was the highest yielding variety tested, averaging 70 bu/acre over all locations. Test weights were generally low, with 'Tribute', 'Neuse', 'Lakin', and 'Roane' ranking the highest with test weights between 57.1 and 57.9 lb/bu. Heading dates, heights, and lodging scores were comparable for all wheats tested. Several hard wheats ('Hondo', TX98D1170, and TX99D4478) had excellent resistance to powdery mildew and leaf rust. Kernel hardness scores ranged from good to very good for the hard wheats, with lower hardness scores at Plymouth, NC and Painter, VA; and higher hardness scores at Plains, GA and Laurel Springs, NC. Flour protein was significantly higher over all locations for most of the hard wheats compared to the soft wheats. 'Lakin', the only hard white in the trial, had the lowest falling number values, averaging 381 seconds over all locations. 'AGS 2000' produced the heaviest grain, followed by 'Neuse', TX99D4478, and 'TAM 110' over all locations.

**Middletown, DE:** Plot size of 62.5 ft<sup>2</sup>; 3 reps; planted on 11 Nov 03; harvested on 22 June 04. Cooperator: Bob Uniatowski.

**Belle Mina, AL:** Plot size of 50 ft<sup>2</sup>; 2 reps; 90 lbs N fertilization; planted on 3 Nov 03; harvested on 7 June 04. Cooperators: J. W. Johnson, D. Bland, and S. Sutton.

**Plains, GA:** Plot size of 50 ft<sup>2</sup>; 2 reps; 90 lbs N fertilization; planted on 12 Nov 03; harvested on 24 May 04. Cooperators: J. W. Johnson, D. Bland, and S. Sutton.

**Lexington, KY:** Cooperator: Dave Van Sanford.

**Princeton, KY:** Cooperator: Dave Van Sanford.

**Clarksville, MD:** Cooperator: Jose Costa.

**Queenstown, MD:** Cooperator: Jose Costa.

**Kinston, NC:** Plot size of 55 ft<sup>2</sup>; 2 reps; Cooperators: D. Marshall and P. Murphy

**Laurel Springs, NC:** Plot size of 55 ft<sup>2</sup>; 3 reps; Cooperators: D. Marshall and P. Murphy

**Plymouth, NC:** Plot size of 55 ft<sup>2</sup>; 3 reps; Cooperators: D. Marshall and P. Murphy

**Salisbury, NC:** Plot size of 55 ft<sup>2</sup>; 2 reps; Cooperators: D. Marshall and P. Murphy

**Rock Springs, PA:** Plot size of 24 ft<sup>2</sup>; 4 reps; planted on 2 Oct 03; harvested on 21 July 04.  
Cooperator: Greg Roth.

**Blacksburg, VA:** Cooperator: Carl Griffey.

**Painter, VA:** Cooperator: Carl Griffey.

**Warsaw, VA:** Cooperator: Carl Griffey.

**USDA/ARS Uniform Bread Wheat Trial 2003-04**

**Entries**

<i>Entry#</i>	<i>Designation</i>	<i>Pedigree</i>	<i>Class*</i>	<i>Origin</i>	<i>Source</i>	<i>Yrs in Trial</i>
1	Coronado	W85-084/W85-225 (=PI591625; W91-287)	HRW	AgriPro	03USDA	2
2	Dumas	WI90-425/WI89-483 (=PI619199; W95-385)	HRW	AgriPro	03USDA	2
3	Hondo	W84-179/W81-171/3/Sturdy/Hawk//Vona/W76-1141 (=PI603958; W95-210)	HRW	AgriPro	03USDA	2
4	Jagalene	Jagger/Abilene (=PI631376; W98-362)	HRW	AgriPro	03USDA	2
5	2137	W2440/W9488A//2163 (=PI592444; HBF0263-137; KS92P0263-137)	HRW	KSU	03USDA	2
6	Ike	Dular/Eagle//2*Cheney/Larned/3/Colt (=PI574488; KS889H48)	HRW	KSU	03USDA	2
7	Lakin	KS89H130/Arlin (=PI617032; KS96HW115)	HWW	KSU	03USDA	2
8	Millennium	Arapahoe/Abilene/4/Colt/3/Warrior*5/Agent//Kavkaz (=PI613099; NE94479)	HRW	UNE	03USDA	2
9	Custer	F29-76/TAM 105//Chisholm (=OK88767-11)	HRW	OSU	03USDA	2
10	Sturdy 2K	Sinvalocho/Wichita//CI 11969/Wichita/3/Seu Seun 1 (=TX391-56-D1-23-D19-7)	HRW	TAM	03USDA	2
11	TAM 110	TAM 105*4/Amigo*4//Largo (=PI595757; TXGH12588-105)	HRW	TAM	03USDA	2
12	TAM 302	Probrand 812/Caldwell//TX86D1310 (=PI605910; TX91D6913)	HRW	TAM	03USDA	2
13	TX96D1073	TX86D1310/Kavkaz//TX86D1308 (=WX87D144-10-99-12-18)	HRW	TAM	03USDA	2
14	TX98D1170	TX89D1253*2//TTCC404 (=WX93D208-9-1-2)	HRW	TAM	03USDA	2
15	TX98D2423	2163*W3453/W2441 (=TX92D4351-2-11-13-1) (=HBG0056 sel)	HRW	TAM	03USDA	2
16	TX99D4478	TX92D8040*3//TTCC259 (=WX93D230-1)	HRW	TAM	03USDA	2
17	AGS 2000	Pioneer 2555/PF84301//Florida 302 (=PI612956; GA89482E7)	SRW	UGA	03USDA	2
18	Neuse	Coker 86-29//Stella/CHD756-80/3/Coker 9907 (=PI633037; NC96-13156)	SRW	NCSU	03USDA	1
19	Roane	VA71-54-147/Coker 68-15//IN65309C1-18-2-3-2 (=PI612958; VA93-54-429)	SRW	VPI	03USDA	2
20	Tribute	VA92-51-39/AL870365 (=VA98W-593)	SRW	VPI	03USDA	2

\* Classes are HRW=Hard Red Winter; HWW=Hard White Winter; and SRW=Soft Red Winter.

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### GRAIN YIELD

Entry	Designation	<u>Mdltown DE</u>		<u>BllMna AL</u>		<u>Plains, GA</u>		<u>Clrksvll MD</u>		<u>O'town MD</u>		<u>Kinston NC</u>		<u>Slsbury NC</u>		<u>Plymouth NC</u>		<u>LrlSprgs NC</u>		<u>Bksburg, VA</u>		Entry
		bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	bu/ac	rank	
1	Coronado	62.8	7	73.4	14	68.7	13	48.6	16	49.4	17	31.5	19	53.1	17	58.1	8	45.1	19	55.7	18	1
2	Dumas	37.7	20	75.6	10	68.8	12	62.1	2	54.3	10	41.5	11	67.2	6	59.3	6	51.2	14	65.4	6	2
3	Hondo	57.0	16	67.6	18	57.1	20	55.2	7	49.0	19	43.3	8	66.3	7	57.5	10	44.0	20	58.0	13	3
4	Jagalene	59.8	11	72.6	15	64.7	15	51.5	12	46.4	20	31.3	20	54.9	14	59.3	7	52.1	12	53.0	20	4
5	2137	59.2	13	79.2	8	62.6	17	46.3	19	57.2	7	42.6	9	57.8	10	56.2	12	61.0	4	57.8	14	5
6	Ike	65.0	5	64.7	20	60.9	18	56.2	5	63.8	2	33.4	17	55.8	12	52.4	16	47.5	15	56.9	16	6
7	Lakin	68.6	3	74.1	12	75.1	8	54.2	8	64.8	1	43.7	7	56.0	11	62.7	4	60.2	5	69.1	3	7
8	Millenium	65.0	6	65.4	19	58.4	19	49.5	13	52.3	15	33.2	18	52.5	19	54.1	15	45.8	17	59.1	11	8
9	Custer	47.6	18	74.9	11	75.0	9	43.7	20	49.0	18	37.9	13	43.2	20	51.2	19	45.6	18	53.0	19	9
10	Sturdy 2K	58.4	14	74.1	13	64.2	16	47.6	17	61.9	4	36.5	14	54.5	15	63.5	3	53.3	10	57.2	15	10
11	TAM 110	47.2	19	79.9	6	80.0	6	61.9	3	55.0	9	58.0	5	78.6	1	56.1	13	54.0	8	66.3	4	11
12	TAM 302	54.9	17	68.3	17	65.1	14	57.2	4	58.4	6	36.4	15	55.0	13	51.4	18	64.7	2	65.5	5	12
13	TX96D1073	59.4	12	71.2	16	75.9	7	49.1	15	55.1	8	41.8	10	62.5	8	55.5	14	55.1	6	56.8	17	13
14	TX98D1170	60.4	10	79.2	7	81.6	4	67.5	1	53.0	13	40.1	12	70.3	4	50.7	20	51.6	13	61.3	10	14
15	TX98D2423	57.1	15	77.0	9	73.7	11	55.5	6	61.4	5	36.1	16	52.8	18	57.5	11	61.1	3	59.0	12	15
16	TX99D4478	62.8	8	82.1	4	74.5	10	51.6	11	52.6	14	69.2	4	74.2	2	51.7	17	54.5	7	62.7	7	16
17	AGS 2000	66.9	4	87.2	2	91.6	1	52.9	10	63.1	3	71.8	3	60.0	9	68.5	1	53.6	9	70.1	2	17
18	Neuse	60.6	9	80.7	5	81.1	5	54.1	9	52.1	16	74.6	1	53.4	16	57.9	9	53.1	11	62.0	9	18
19	Roane	79.1	1	87.2	1	83.3	3	47.4	18	53.6	12	50.1	6	68.5	5	67.1	2	78.2	1	62.2	8	19
20	Tribute	75.4	2	85.8	3	85.6	2	49.4	14	54.0	11	73.0	2	73.5	3	62.4	5	46.5	16	75.2	1	20
	<i>Mean</i>	60.2		76.0		72.4		53.1		55.3		46.3		60.5		57.7		53.9		61.3		
	<i>LSD (5%)</i>	8.3		10.0		7.8		23.3		11.5		9.8		10.3		5.1		13.9		6.9		
	<i>CV (%)</i>	7.1		3.4		5.1		21.0		9.9		12.8		10.3		5.4		15.6		8.1		

**GRAIN YIELD (continued)**

<i>Designation</i>	<i>Painter, VA</i>		<i>Warsaw, VA</i>		<i>Lexington, KY</i>		<i>Princeton, KY</i>		<i>Rock Springs, PA</i>		<i>15-location mean</i>	
	<i>bu/ac</i>	<i>rank</i>	<i>bu/ac</i>	<i>rank</i>	<i>bu/ac</i>	<i>rank</i>	<i>bu/ac</i>	<i>rank</i>	<i>bu/ac</i>	<i>rank</i>	<i>bu/ac</i>	<i>rank</i>
Coronado	60.7	15	61.9	6	26.7	19	73.4	8	46.6	19	54.4	17
Dumas	65.0	10	58.9	10	56.2	4	71.7	9	55.1	11	59.3	11
Hondo	62.9	12	55.7	14	37.3	17	82.6	1	61.2	9	57.0	14
Jagalene	56.5	18	58.3	11	20.3	20	76.6	4	45.5	20	53.5	20
2137	61.1	13	55.6	15	38.8	12	60.6	19	54.5	13	56.7	15
Ike	55.7	19	54.4	17	38.5	15	76.1	6	49.2	18	55.4	16
Lakin	68.0	4	61.7	7	46.9	7	68.4	13	55.0	12	61.9	8
Millenium	54.5	20	52.7	19	37.2	18	78.7	3	51.9	16	54.0	18
Custer	65.9	8	48.4	20	49.3	6	70.0	10	52.5	15	53.8	19
Sturdy 2K	57.7	17	60.5	8	49.8	5	66.1	14	50.8	17	57.1	13
TAM 110	65.4	9	53.2	18	38.9	11	69.5	11	66.0	5	62.0	7
TAM 302	60.3	16	59.1	9	38.6	14	79.8	2	53.9	14	57.9	12
TX96D1073	66.6	7	63.7	5	57.5	3	62.7	18	61.0	10	59.6	9
TX98D1170	60.8	14	56.5	13	62.0	2	68.4	12	66.2	4	62.0	5
TX98D2423	64.2	11	54.5	16	45.2	9	75.9	7	62.2	7	59.5	10
TX99D4478	68.3	3	57.6	12	38.0	16	63.8	16	66.7	3	62.0	6
AGS 2000	67.2	5	71.0	3	38.7	13	66.0	15	64.2	6	66.2	2
Neuse	73.1	1	64.4	4	46.7	8	56.4	20	72.3	2	62.8	4
Roane	66.9	6	78.7	2	44.3	10	62.8	17	61.8	8	66.1	3
Tribute	69.3	2	80.3	1	67.1	1	76.5	5	76.0	1	70.0	1
<i>Mean</i>	63.5		60.4		43.9		70.3		58.6		59.6	
<i>LSD (5%)</i>	5.4		5.8		12.3		8.1		6.7		5.2	
<i>CV (%)</i>	6.2		7.0		16.2		9.7		8.1		12.2	

**TEST WEIGHT**

Entry#	Designation	Mdltown	BllMna	Plains	Clrksvl	Q'town	Knston	Slsbury	Plymth	LrlSprgs	Bksburg	Painter	Warsaw	Lxingtn	Prncetn	RkSprngs	15 location	
		<u>DE</u> lb/bu	<u>AL</u> lb/bu	<u>GA</u> lb/bu	<u>MD</u> lb/bu	<u>MD</u> lb/bu	<u>NC</u> lb/bu	<u>NC</u> lb/bu	<u>NC</u> lb/bu	<u>NC</u> lb/bu	<u>NC</u> lb/bu	<u>VA</u> lb/bu	<u>VA</u> lb/bu	<u>VA</u> lb/bu	<u>KY</u> lb/bu	<u>KY</u> lb/bu	<u>PA</u> lb/bu	<u>mean</u> lb/bu
1	Coronado	58.6	56	59	58.0	59.5	55.5	57.5	56.7	53.6	51.6	57.5	58.5	48.8	53.7	49.2	55.6	13
2	Dumas	51.3	56	60	58.5	60.5	54.9	57.8	57.1	55.2	55.6	58.6	59.9	49.9	54.7	55.1	56.3	7
3	Hondo	52.3	56	62	55.9	55.7	52.3	58.4	57.9	51.9	53.3	57.9	61.4	54.4	55.2	56.9	56.1	10
4	Jagalene	55.7	57	61	58.2	58.9	56.6	58.8	58.0	54.8	48.2	58.4	60.4	49.6	54.5	53.4	56.2	9
5	2137	56.3	55	60	57.3	59.5	55.6	57.4	56.2	54.6	53.2	57.9	58.8	50.7	54.2	54.0	56.0	11
6	Ike	57.6	56	61	58.7	60.7	54.5	57.8	57.7	55.0	53.2	58.7	60.0	50.2	54.1	55.8	56.7	5
7	Lakin	58.0	55	60	59.1	59.9	57.4	57.5	57.5	56.2	56.6	58.4	59.8	52.7	54.0	55.0	57.1	3
8	Millennium	56.3	54	60	57.3	53.8	51.6	57.3	57.3	48.5	50.8	58.7	60.8	51.6	53.8	55.1	55.1	16
9	Custer	52.0	57	60	57.2	60.0	55.4	58.1	57.2	55.1	50.5	57.9	59.2	51.3	54.7	53.4	55.9	12
10	Sturdy 2K	55.5	55	59	53.6	58.2	52.0	55.6	55.4	53.3	49.7	56.8	58.3	45.7	52.6	54.0	54.3	19
11	TAM 110	54.2	56	58	55.0	60.0	56.0	56.4	56.3	55.7	51.2	55.1	56.7	49.0	53.6	55.1	55.2	15
12	TAM 302	49.2	51	55	55.4	56.7	51.4	55.5	53.2	51.2	50.0	55.7	57.8	49.6	52.2	52.3	53.1	20
13	TX96D1073	56.8	56	60	58.0	59.5	54.7	58.4	57.7	55.3	47.3	58.7	60.6	55.5	53.1	56.9	56.6	6
14	TX98D1170	54.7	55	59	55.8	58.0	54.0	56.4	55.7	54.2	51.3	53.3	56.1	50.2	52.9	56.1	54.8	18
15	TX98D2423	54.2	55	61	57.1	57.2	54.9	57.4	56.5	51.2	51.1	57.6	59.3	51.6	53.2	56.2	55.6	14
16	TX99D4478	54.8	55	57	55.1	60.0	56.9	57.8	56.7	55.6	49.4	55.6	57.6	48.2	51.9	54.7	55.1	17
17	AGS 2000	58.0	56	58	57.5	58.6	58.0	55.9	56.0	53.4	54.9	57.1	57.6	54.1	53.8	55.7	56.3	8
18	Neuse	57.1	56	61	59.7	60.3	57.9	58.4	57.8	54.9	54.8	59.3	61.4	54.1	55.9	57.2	57.7	2
19	Roane	58.6	56	61	59.8	60.3	55.3	57.5	56.7	50.6	52.6	59.1	60.2	55.0	56.2	57.1	57.1	4
20	Tribute	58.5	56	63	59.8	59.3	58.7	58.3	57.3	53.2	51.7	59.1	61.0	56.9	57.6	59.2	57.9	1
	<i>Mean</i>	55.20	55.4	59.7	57.3	58.9	55.2	57.4	56.7	53.7	51.9	57.6	59.3	51.5	54.0	55.3	55.9	
	<i>LSD (5%)</i>	3.60	—	—	—	—	1.8	0.6	0.4	1.9	4.7	0.6	0.5	—	—	1.1	1.1	
	<i>CV (%)</i>	4.60	—	—	—	—	1.9	0.7	0.4	2.1	6.6	0.7	0.6	—	—	1.4	2.8	



### HEADING DATE (JULIAN)

Entry#	Designation	Middletown	Plains	Clarksville	Queenstown	Kinston	Blacksburg	Warsaw	Lexington	Princeton	Rock Springs	10 location
		DE	GA	MD	MD	NC	VA	VA	KY	KY	PA	mean
1	Coronado	138	93	131	127	108	127	116	128	118	140	123
2	Dumas	137	94	131	129	111	127	119	130	119	141	124
3	Hondo	140	104	134	136	118	130	124	136	128	144	129
4	Jagalene	137	94	132	129	111	127	120	130	118	142	124
5	2137	137	103	132	130	112	129	120	130	120	142	125
6	Ike	137	104	131	131	116	129	122	133	122	141	127
7	Lakin	135	98	131	129	111	128	119	128	119	142	124
8	Millennium	140	103	135	137	121	131	127	135	131	144	130
9	Custer	135	92	131	129	111	126	117	129	118	141	123
10	Sturdy 2K	136	100	132	130	112	129	120	130	119	142	125
11	TAM 110	134	89	130	127	104	125	115	128	116	141	121
12	TAM 302	138	98	134	132	113	130	122	130	122	143	126
13	TX96D1073	136	91	132	129	110	128	119	129	119	141	123
14	TX98D1170	136	91	132	128	109	126	119	129	117	141	123
15	TX98D2423	138	100	131	131	111	129	121	132	120	143	126
16	TX99D4478	135	93	132	130	110	127	120	130	118	140	123
17	AGS 2000	136	92	132	128	106	127	116	131	117	143	123
18	Neuse	138	100	131	131	112	129	122	131	119	143	126
19	Roane	137	101	132	130	112	128	120	130	121	141	125
20	Tribute	136	98	132	130	109	127	117	130	118	141	124
	<i>Mean</i>	137	97	132	130	111	127.9	119.8	130	120	142	124.7
	<i>LSD (5%)</i>	—	—	2	2	—	0.6	0.9	—	—	—	1.5
	<i>CV (%)</i>	—	—	9.4	9.9	—	1.2	2.2	—	—	—	1.4

## HEIGHT

Entry#	Designation	Middletown	Plains	Clarksville	Queenstown	Blacksburg	Warsaw	Lexington	Princeton	Rock Springs	9 location
		<u>DE</u> in.	<u>GA</u> in.	<u>MD</u> in.	<u>MD</u> in.	<u>VA</u> in.	<u>VA</u> in.	<u>KY</u> in.	<u>KY</u> in.	<u>PA</u> in.	<u>mean</u> in.
1	Coronado	29	29	34.0	33	31.0	30.3	30	35	29.0	31.1
2	Dumas	28	30	35.0	34	33.3	32.0	33	38	32.0	32.8
3	Hondo	32	33	35.5	34	32.7	33.3	33	40	33.3	34.1
4	Jagalene	33	31	35.0	34	32.0	31.3	31	37	30.8	32.8
5	2137	38	30	33.0	35	30.7	31.3	31	38	31.8	33.2
6	Ike	33	34	36.5	39	35.0	35.0	33	41	33.5	35.6
7	Lakin	32	32	36.0	37	34.3	32.0	34	40	32.5	34.4
8	Millennium	37	35	35.0	39	36.0	34.7	37	42	35.5	36.8
9	Custer	30	34	37.5	35	33.0	30.0	32	39	31.3	33.5
10	Sturdy 2K	34	31	38.0	39	36.7	34.7	34	43	35.0	36.2
11	TAM 110	31	33	33.5	35	34.0	32.3	33	40	33.0	33.9
12	TAM 302	31	32	32.5	35	33.0	32.3	34	38	32.8	33.4
13	TX96D1073	30	35	34.0	35	31.0	31.3	32	37	32.5	33.1
14	TX98D1170	32	35	33.5	37	33.0	31.3	32	41	30.3	33.9
15	TX98D2423	32	34	35.5	38	33.3	33.0	35	42	33.8	35.2
16	TX99D4478	32	34	35.0	35	32.7	32.7	32	40	33.3	34.1
17	AGS 2000	34	33	35.5	36	34.3	31.7	33	40	32.0	34.4
18	Neuse	32	32	35.5	35	32.0	30.7	34	38	31.5	33.4
19	Roane	29	31	35.5	33	30.0	29.7	32	34	30.8	31.7
20	Tribute	32	30	36.0	32	31.0	29.7	32	38	30.5	32.4
	<i>Mean</i>	31.9	32.4	35.1	35.3	33.0	32.0	32.9	39.1	32.2	33.8
	<i>LSD (5%)</i>	5	—	3.4	1.9	2.0	1.2	—	—	2.1	1.2
	<i>CV (%)</i>	6	—	4.6	2.6	4.3	2.8	—	—	4.5	3.9

**LODGING\***

Entry#	Designation	Clarksville	Princeton	2-location		Middletown	Blacksburg	Rock Springs	3-location	
		<u>MD</u>	<u>KY</u>	<u>mean</u>		<u>DE</u>	<u>VA</u>	<u>PA</u>	<u>mean</u>	
		0-9	0-9	0-9	rank	0.2-10.0	0.2-10.0	0.2-10.0	0-9	rank
1	Coronado	2.0	0.0	1.0	5	1.0	0.3	0.2	0.5	2
2	Dumas	0.5	0.0	0.3	2	2.3	0.2	1.4	1.3	18
3	Hondo	5.0	2.5	3.8	18	1.3	0.2	0.3	0.6	9
4	Jagalene	4.0	0.0	2.0	10	1.8	0.2	0.2	0.7	11
5	2137	2.5	0.0	1.2	9	1.3	0.2	0.4	0.6	6
6	Ike	4.5	0.0	2.2	11	1.8	1.1	0.5	1.1	15
7	Lakin	2.0	0.1	1.0	6	1.8	1.2	0.5	1.2	16
8	Millennium	5.0	0.0	2.5	12	1.8	0.2	0.0	0.7	12
9	Custer	2.0	0.0	1.0	7	1.5	0.3	0.1	0.6	5
10	Sturdy 2K	9.0	0.5	4.7	20	3.3	0.6	0.7	1.5	19
11	TAM 110	7.5	1.5	4.5	19	1.8	1.2	0.6	1.2	17
12	TAM 302	5.5	1.1	3.3	17	2.0	0.2	0.6	0.9	14
13	TX96D1073	1.5	0.0	0.7	3	1.0	0.3	0.6	0.6	4
14	TX98D1170	4.5	1.1	2.8	14	4.0	0.2	0.5	1.6	20
15	TX98D2423	0.0	0.1	0.1	1	1.3	0.3	0.5	0.7	10
16	TX99D4478	1.0	0.8	0.9	4	1.8	0.2	0.4	0.8	13
17	AGS 2000	5.0	0.0	2.5	13	1.3	0.3	0.0	0.5	3
18	Neuse	2.0	0.1	1.0	8	1.0	0.2	0.0	0.4	1
19	Roane	5.5	0.3	2.9	15	1.3	0.3	0.2	0.6	7
20	Tribute	5.0	1.1	3.0	16	1.0	0.8	0.1	0.6	8
	<i>Mean</i>	3.7	0.5	2.1		1.7	0.4	0.4	0.8	
	<i>LSD (5%)</i>	5.8	—	3.2		0.8	0.3	ns	0.8	
	<i>CV (%)</i>	74.4	—	73.2		33.8	49.8	155.6	56.5	

\* Lodging rated on a 0-to-9 scale at Clarksville and Princeton, and on the Belgian Lodging Scale = Area x Intensity 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); at Middletown, Blacksburg, and Rock Springs.

**POWDERY MILDEW**

Entry	Designation	Plains	Kinston	Painter	Warsaw	Lexington	Rock Springs	Severity		Kinston	
		<u>GA</u> 0-9	<u>NC</u> 0-9	<u>VA</u> 0-9	<u>VA</u> 0-9	<u>KY</u> 0-9	<u>PA</u> 0-9	<u>mean</u> 0-9	rank	<u>AUC*</u>	rank
1	Coronado	6	8.3	4.0	0.7	5	8	5.3	15	179.2	18
2	Dumas	5	7.2	4.3	1.0	5	9	5.3	16	152.3	11
3	Hondo	0	0.0	1.0	0.0	2	1	0.7	4	0.0	4
4	Jagalene	9	9.0	5.7	6.3	7	9	7.7	20	202.5	20
5	2137	5	7.2	5.7	1.3	4	8	5.2	14	163.2	16
6	Ike	6	8.5	4.3	2.3	7	8	6.0	18	185.2	19
7	Lakin	3	6.7	3.3	0.7	6	9	4.8	11	149.7	10
8	Millennium	7	7.3	5.0	2.7	6	8	6.0	19	160.0	15
9	Custer	5	7.2	4.0	0.0	5	9	5.0	13	159.7	14
10	Sturdy 2K	3	5.7	3.7	1.7	5	8	4.5	10	102.2	8
11	TAM 110	0	0.0	1.7	0.0	0	0	0.3	1	0.0	1
12	TAM 302	3	6.3	3.3	0.3	4	7	4.0	8	144.7	9
13	TX96D1073	5	6.7	4.3	0.0	5	8	4.8	12	158.0	12
14	TX98D1170	0	0.0	2.0	0.0	1	2	0.8	6	0.0	5
15	TX98D2423	3	7.2	4.3	4.0	5	8	5.3	17	158.0	13
16	TX99D4478	1	0.0	1.0	0.0	1	0	0.5	2	0.0	2
17	AGS 2000	1	4.7	4.3	0.3	2	3	2.5	7	85.0	7
18	Neuse	0	0.0	1.3	0.0	1	1	0.5	3	0.0	3
19	Roane	0	8.2	5.7	0.3	4	8	4.4	9	174.2	17
20	Tribute	0	2.3	1.3	0.7	0	0	0.7	5	11.7	6
<i>Mean</i>		3.1	5.1	3.5	1.1	3.7	5.7	3.7		109.3	
<i>LSD (5%)</i>		—	0.9	1.0	1.4	—	1.3	1.7		15.9	
<i>CV (%)</i>		—	10.8	20.6	93.7	—	15.7	39.3		8.8	

\* AUC=Area under the disease progress curve at Kinston. Encompasses 4 mildew ratings, taken at weekly intervals from 15 April to 7May. Larger values mean more severe mildew throughout the time period.

**OTHER DISEASES**

<i>Entry#</i>	<i>Designation</i>	<i>Head Scab</i>		<i>BYDV*</i>		<i>WSSV*</i>	<i>Leaf Rust</i>
		<i>Lexington</i>	<i>Rock Spgs</i>	<i>Blacksburg</i>	<i>Warsaw</i>	<i>Warsaw</i>	<i>Blacksburg</i>
		<u><i>KY</i></u> <i>0-9</i>	<u><i>PA</i></u> <i>%</i>	<u><i>VA</i></u> <i>0-9</i>	<u><i>VA</i></u> <i>0-9</i>	<u><i>VA</i></u> <i>0-5</i>	<u><i>VA</i></u> <i>0-9</i>
1	Coronado	4.5	49	4.0	3.3	0.5	2.3
2	Dumas	5.5	7	3.3	3.3	0.0	1.0
3	Hondo	3.5	2	3.0	5.7	0.0	3.3
4	Jagalene	8.0	28	4.3	3.7	2.0	2.7
5	2137	6.0	23	3.3	3.0	0.5	2.7
6	Ike	5.5	3	3.7	2.7	0.0	5.0
7	Lakin	6.0	6	3.0	3.0	0.0	8.3
8	Millennium	2.5	9	3.0	3.0	0.0	1.0
9	Custer	8.0	24	3.0	1.3	0.0	2.0
10	Sturdy 2K	7.5	13	3.7	3.7	0.0	1.7
11	TAM 110	4.5	13	3.7	5.7	1.5	1.0
12	TAM 302	5.5	15	3.0	2.0	0.0	1.3
13	TX96D1073	4.0	7	3.3	2.0	0.0	0.7
14	TX98D1170	4.0	13	3.0	2.3	0.0	1.3
15	TX98D2423	4.0	15	3.7	4.7	1.0	0.7
16	TX99D4478	6.5	11	4.0	3.7	0.0	2.3
17	AGS 2000	8.0	12	3.7	0.3	0.0	1.0
18	Neuse	3.0	6	3.0	2.3	0.0	0.3
19	Roane	2.5	7	2.3	1.0	0.0	4.0
20	Tribute	3.0	6	2.7	2.0	0.0	0.7
	<i>Mean</i>	5.1	13	3.3	2.9	0.3	2.2
	<i>LSD (5%)</i>	—	9	0.8	1.5	1.1	1.8
	<i>CV (%)</i>	—	48	18.3	35.9	228.1	59.0

\* BYDV=Barley Yellow Dwarf Virus and WSSV=Wheat Spindle Streak Virus

**SINGLE KERNEL HARDNESS**

Entry#	Designation	<u>Plains GA</u>		<u>Kinston NC</u>		<u>Plymouth NC</u>		<u>Salisbury NC</u>		<u>Laurel Springs NC</u>		<u>Rock Springs PA</u>		<u>Blacksburg VA</u>		<u>Painter VA</u>	
		Score	Class	Score	Class	Score	Class	Score	Class	Score	Class	Score	Class	Score	Class	Score	Class
1	Coronado	78	Hard	71	Hard	59	Hard	67	Hard	73	Hard	61	Hard	65	Hard	57	Hard
2	Dumas	88	Hard	80	Hard	55	Hard	67	Hard	74	Hard	62	Hard	61	Hard	58	Hard
3	Hondo	89	Hard	77	Hard	64	Hard	68	Hard	84	Hard	74	Hard	75	Hard	68	Hard
4	Jagalene	86	Hard	76	Hard	65	Hard	68	Hard	74	Hard	66	Hard	72	Hard	66	Hard
5	2137	83	Hard	67	Hard	55	Hard	62	Hard	80	Hard	59	Hard	60	Hard	nd	nd
6	Ike	78	Hard	62	Hard	54	Hard	63	Hard	74	Hard	60	Hard	61	Hard	62	Hard
7	Lakin	80	Hard	71	Hard	54	Hard	63	Hard	74	Hard	63	Hard	64	Hard	57	Hard
8	Millennium	89	Hard	69	Hard	59	Hard	65	Hard	73	Hard	62	Hard	70	Hard	62	Hard
9	Custer	80	Hard	67	Hard	62	Hard	69	Hard	78	Hard	62	Hard	69	Hard	57	Hard
10	Sturdy 2K	92	Hard	87	Hard	63	Hard	79	Hard	88	Hard	79	Hard	73	Hard	62	Hard
11	TAM 110	82	Hard	71	Hard	51	Mixed	63	Hard	75	Hard	55	Hard	56	Hard	58	Hard
12	TAM 302	87	Hard	70	Hard	54	Hard	65	Hard	78	Hard	60	Hard	63	Hard	54	Mixed
13	TX96D1073	70	Hard	66	Hard	57	Hard	64	Hard	68	Hard	56	Hard	56	Hard	54	Hard
14	TX98D1170	79	Hard	69	Hard	51	Mixed	59	Hard	74	Hard	59	Hard	58	Hard	54	Mixed
15	TX98D2423	89	Hard	77	Hard	52	Hard	67	Hard	67	Hard	61	Hard	72	Hard	57	Hard
16	TX99D4478	79	Hard	70	Hard	60	Hard	69	Hard	81	Hard	60	Hard	65	Hard	64	Hard
17	AGS 2000	14	Soft	6	Soft	3	Soft	8	Soft	24	Soft	10	Soft	10	Soft	6	Soft
18	Neuse	35	Soft	22	Soft	15	Soft	27	Soft	24	Soft	21	Soft	33	Soft	21	Soft
19	Roane	44	Mixed	27	Soft	16	Soft	25	Soft	33	Soft	22	Soft	25	Soft	26	Soft
20	Tribute	44	Mixed	27	Soft	20	Soft	26	Soft	40	Mixed	28	Soft	29	Soft	26	Soft



**FLOUR FALLING NUMBER**

Entry #	Designation	Kinston	Plymouth	Salisbury	LrlSpgs	8-location	
		<u>NC</u> s	<u>NC</u> s	<u>NC</u> s	<u>NC</u> s	<u>mean</u> s	rank
1	Coronado	513	483	451	239	421	14
2	Dumas	508	468	482	407	466	5
3	Hondo	519	473	468	335	449	6
4	Jagalene	482	471	450	394	449	7
5	2137	538	503	464	482	497	2
6	Ike	459	413	375	292	385	19
7	Lakin	491	419	332	282	381	20
8	Millennium	478	454	414	271	404	16
9	Custer	478	453	465	296	423	12
10	Sturdy 2K	526	493	520	488	507	1
11	TAM 110	531	485	501	413	482	4
12	TAM 302	408	442	390	456	424	11
13	TX96D1073	521	464	443	260	422	13
14	TX98D1170	531	441	435	306	428	10
15	TX98D2423	470	393	384	360	402	17
16	TX99D4478	573	503	514	370	490	3
17	AGS 2000	484	448	451	333	429	9
18	Neuse	467	427	435	409	434	8
19	Roane	451	399	426	324	400	18
20	Tribute	473	409	435	306	405	15
	<i>Mean</i>	495	452	442	351	435	
	<i>LSD (5%)</i>	—	—	—	—	56	
	<i>CV (%)</i>	—	—	—	—	9	







