



1982

Regional Cotton Fusarium Wilt
Report

Department of Agronomy and Soils
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Gale A. Buchanan, Director

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1982 REGIONAL COTTON FUSARIUM WILT REPORT¹

A. J. Kappelman, Jr.²

The fusarium wilt resistance of cultivars and elite breeding lines submitted by 25 cooperators was evaluated. The entries were grown at the Plant Breeding Unit at Tallassee, Alabama, on a Wickham sandy loam known to be highly infested with both fusarium wilt (Fusarium oxysporum Schlect. f. vasinfectum [Atk.] Snyder & Hans.) and root-knot nematodes (Meloidogyne spp.). Both a susceptible ('Rowden') and resistant ('McNair 235') check were also evaluated. Rowden was planted in row 5 (15, 25, ..., 305) and McNair 235 in row 10 (20, 30, ..., 300) and in every tenth row thereafter throughout the test.

All plots were bedded, single rows, 30 feet long, spaced 40 inches apart and separated by 6-foot alleys. Four replications of the test entries were arranged in a systematically randomized complete block design. Entries were planted on May 3, plots thinned to 3 to 4 plants per row-foot on June 15, and established live plant counts recorded on June 21. Wilted plants were counted, removed, and recorded three times during the growing season (July 7, August 11, and September 8), and remaining live plants counted and recorded on September 9. The percent wilted plants per plot was then determined and mean wilting for a given entry calculated.

Environmental conditions for the 7 weeks immediately following planting were cool and wet. As a result, a considerable amount of seedling disease occurred and plant development was slow. However, by July 7 some wilting was becoming evident. Additional wilting occurred throughout the season, but

¹This is a progress report for information and guidance of cooperators, the interpretation of which may be modified with additional experimentation.

²Research Plant Pathologist, USDA-ARS, Adjunct Associate Professor, Department of Agronomy and Soils, Alabama Agricultural Experiment Station.

considerable variability in wilting occurred, especially over replications. The most severe wilting occurred in replication 1, followed by that in replications 2, 4, and 3, respectively, but the lowest variability in wilting occurred in replications 1 and 3.

Average wilting over the entire test for Rowden (124 plots) was 56.6 percent, but incidence ranged from 2 to 100 percent. The incidence of wilting in McNair 235, the resistant check, ranged from 0 to 73 percent but averaged only 16.8 percent. Wilting varied in different areas of a given replication, partially due to the large number of entries per replication. Critical evaluation of a given entry should be made relative to those checks closest to the entry within each replication. Evaluation of breeding progress or evaluation of entries over years should be made only between values determined relative to the mean wilting of Rowden for a given year.

Entries submitted by W. C. Johnson are commonly-grown cultivars or highly advanced commercial materials; therefore, these are listed by name. Entries submitted by other cooperators are listed by their coded numbers. Additional information regarding the genetic background of a specific coded entry should be obtained from the named cooperator.

Regional Cotton Fusarium Wilt Test Results, 1982

Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Keith R. Jones, Delta & Pine Land Co., Scott, Mississippi					
DPL-1	76.7	70.6	7.3	12.5	41.8
DPL-2	38.5	39.4	36.4	8.3	30.6
DPL-3	35.7	100.0	33.3	27.3	49.1
DPL-4	58.3	81.8	85.7	5.3	57.8
Rowden	100.0	100.0	62.9	16.4	69.8
DPL-5	16.7	90.9	14.3	7.9	32.4
DPL-6	20.0	41.7	50.0	2.0	28.4
DPL-7	6.2	74.0	40.6	12.8	33.4
DPL-8	13.8	42.9	37.0	25.0	29.7
McNair 235	12.6	72.2	42.9	9.8	34.4
DPL-9	55.4	30.8	18.6	17.9	30.7
DPL-10	58.5	33.3	35.5	22.5	37.4
Carl A. Moosberg, GroAgri Seed Company, Lubbock, Texas					
CAM-1	32.9	21.6	4.9	13.5	18.2
CAM-2	32.5	25.6	8.2	6.9	18.3
Rowden	94.0	88.4	34.8	37.0	63.6
CAM-3	59.4	3.4	24.2	25.9	28.2
CAM-4	26.7	93.0	1.7	14.0	33.8
CAM-5	18.9	21.6	5.6	92.3	34.6
Mason Hawkins, Ranger Seed Co., Tahoka, Texas					
RSC-1	29.0	25.0	23.1	24.1	25.3
McNair 235	10.3	4.9	20.2	5.4	20.4
RSC-2	15.1	24.4	4.9	20.0	16.1
RSC-3	14.7	18.9	6.8	35.3	18.9
RSC-4	32.3	28.6	15.5	15.3	22.9
RSC-5	35.8	33.3	2.8	11.9	21.0
Rowden	72.5	34.2	19.1	60.0	46.4
RSC-6	10.2	17.2	0.0	23.5	12.7
RSC-7	8.6	9.8	26.0	11.1	13.9
RSC-8	37.7	15.6	98.6	5.4	39.3
RSC-9	40.5	15.1	20.3	4.4	20.1
McNair 235	6.9	14.3	9.7	9.0	10.0
Jerry L. Baker, Pioneer Hi-Bred International, Inc., Vernon, Texas					
PR-1	61.5	29.6	7.0	15.8	28.5
PR-2	66.7	20.0	9.8	9.3	26.4
PR-3	42.4	21.3	3.7	4.5	18.0
PR-4	24.6	26.5	13.6	29.4	23.5
Rowden	69.1	40.6	33.3	67.6	52.6
PR-5	49.0	21.6	13.9	5.5	22.5
PR-6	24.1	27.7	5.9	11.5	17.3
PR-7	26.3	25.3	4.7	36.4	23.2
PR-8	18.9	22.8	2.9	35.0	19.9
McNair 235	20.5	13.6	17.5	12.9	16.1
PR-9	25.8	18.3	8.2	7.4	14.9
PR-10	1.5	18.8	8.2	21.7	12.6

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Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
J. B. Weaver, Jr., University of Georgia, Athens, Georgia					
JBW-1	3.2	1.8	15.0	2.0	5.5
JBW-2	7.6	11.4	8.2	0.0	6.8
Rowden	66.7	75.9	35.3	51.2	57.3
JBW-3	40.5	45.3	5.7	31.8	30.8
JBW-4	40.4	35.7	10.4	35.9	30.6
JBW-5	28.0	25.0	70.6	18.9	35.6
JBW-6	16.7	11.8	0.0	10.2	9.7
McNair 235	12.2	6.6	3.4	24.1	11.6
JBW-7	0.0	18.9	21.1	14.3	13.6
JBW-8	35.5	33.3	3.3	3.7	19.0
R. B. Bridge, Mississippi State University, Stoneville, Mississippi					
RB-1	31.4	5.3	24.6	1.9	15.8
RB-2	30.4	2.2	37.9	5.4	19.0
Rowden	59.6	70.9	8.0	66.7	51.3
RB-3	49.3	6.8	2.8	31.6	22.6
RB-4	33.3	20.0	2.1	7.0	15.6
RB-5	26.8	7.8	0.0	58.5	23.3
RB-6	15.9	6.1	0.0	53.4	18.8
McNair 235	13.0	12.5	7.8	23.1	14.1
RB-7	48.3	12.7	0.0	21.6	20.6
RB-8	14.1	6.2	1.9	8.1	7.6
RB-9	5.0	13.8	9.1	10.3	9.6
RB-10	45.3	14.3	25.4	28.6	28.4
Rowden	100.0	64.3	39.1	33.3	59.2
Steve Wilhelm, University of California, Berkley, California					
Acala	18.4	17.3	1.5	6.1	10.8
Jerry D. Carrol, Delta & Pine Land Co., Lubbock, Texas					
JDC-1	28.6	18.6	18.4	41.0	26.7
JDC-2	37.5	13.3	44.3	55.5	37.7
JDC-3	63.5	42.9	13.8	11.1	32.8
McNair 235	34.8	14.1	1.2	13.6	15.9
JDC-4	15.9	7.5	29.2	26.6	19.8
JDC-5	24.2	37.2	21.3	35.7	29.6
JDC-6	71.5	93.3	2.4	7.1	43.6
JDC-7	0.0	26.7	14.0	0.0	10.2
Rowden	85.3	53.4	17.3	52.3	52.1
JDC-8	82.8	13.8	16.9	16.6	32.5
JDC-9	52.9	7.1	7.0	0.0	16.8
JDC-10	34.1	35.9	4.2	5.1	19.8

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	1	2	3	4	
Delbert C. Hess, Cargill Seed Division, Plainview, Texas					
DH-1	49.3	20.5	18.1	11.3	24.8
McNair 235	65.9	42.4	0.0	8.1	29.1
DH-2	57.1	81.8	4.5	15.3	39.7
DH-3	17.6	50.0	9.8	22.2	24.9
DH-4	36.8	58.5	16.6	3.7	28.9
DH-5	35.4	15.2	18.9	25.0	23.6
Rowden	91.8	98.6	23.1	24.1	59.4
DH-6	22.4	25.5	13.0	7.7	17.2
DH-7	11.9	44.0	2.2	14.9	18.2
DH-8	15.2	15.6	3.8	3.4	9.5
DH-9	12.5	18.9	9.8	10.7	13.0
McNair 235	16.8	22.8	3.4	12.8	14.0
DH-10	45.5	77.8	38.8	39.3	50.4
L. S. Bird, Texas A&M University, College Station, Texas					
CAMD-21-S-7-81	24.5	7.0	3.6	0.0	8.8
CABCS'-1-81	27.1	15.7	0.0	13.8	14.2
CABU'CS-2-81	10.8	10.7	2.7	8.3	8.1
Rowden	85.7	84.7	26.5	78.8	68.9
LEBOBCS'-1-81	40.4	20.0	23.8	16.7	25.2
LEBOCAS-1-81	0.0	20.0	0.0	11.8	8.0
LEBOCAS-2-81	10.0	19.2	11.1	0.0	10.1
LEBOCAS'-3-81	11.1	23.5	0.0	4.3	9.7
McNair 235	11.0	2.9	5.1	29.9	12.2
LEBOCAS'-4-81	10.3	25.0	26.8	25.7	22.0
LEBOCAS'5-81	28.6	60.0	18.9	0.0	26.9
LEBOCDS'-1-81	28.1	8.1	13.5	16.3	16.5
LEBOCDS'-2'81	46.2	7.6	8.3	0.0	15.5
Lynn McDonald, Coker's Pedigreed Seed Co., Hartsville, South Carolina					
Rowden	92.4	40.3	50.0	63.2	61.5
LM-1	25.9	14.3	16.3	17.6	18.5
LM-2	5.9	41.2	17.1	9.0	18.3
LM-3	27.8	18.3	25.6	3.0	18.7
LM-4	61.0	11.4	12.1	6.2	22.7
McNair 235	5.6	3.6	9.0	4.5	5.7
LM-5	21.2	4.8	4.8	10.3	10.3
LM-6	38.3	10.1	31.1	9.5	22.2
LM-7	30.8	4.3	32.1	13.8	20.2
LM-8	30.9	10.4	11.9	12.2	16.4
Rowden	59.7	32.0	14.8	56.5	40.8

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Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Kamal El-Zik, Texas A&M University, College Station, Texas					
KEZ-1	20.6	23.8	0.0	12.2	14.2
KEZ-2	20.0	19.4	0.0	31.2	17.6
KEZ-3	24.5	3.1	0.0	8.2	9.0
KEZ-4	15.2	6.1	14.3	12.0	11.9
McNair 235	20.2	17.7	23.1	21.8	20.7
KEZ-5	0.0	32.4	0.0	58.2	22.6
KEZ-6	22.2	10.6	6.7	1.9	10.4
KEZ-7	16.7	9.7	21.4	12.8	15.2
KEZ-8	16.4	7.7	0.0	11.3	8.8
Rowden	78.8	49.0	68.3	82.0	69.5
KEZ-9	6.8	9.8	9.7	4.3	7.6
KEZ-10	20.0	10.2	0.0	33.3	15.9
L. L. Barton, Rogers Delinted Cottonseed Co., Waco, Texas					
LLB-1	17.8	7.9	57.5	38.4	30.4
LLB-2	55.4	10.9	22.2	80.3	42.2
McNair 235	1.5	15.6	14.3	36.0	16.8
LLB-3	50.0	4.9	13.0	98.2	41.5
LLB-4	35.4	18.2	14.3	26.7	23.6
LLB-5	27.6	17.9	31.6	18.2	23.8
LLB-6	21.4	10.3	7.5	18.9	14.5
Rowden	42.9	10.7	32.9	91.4	44.5
LLB-7	31.1	12.0	40.6	60.0	35.9
LLB-8	39.8	7.8	21.8	32.0	25.4
LLB-9	25.0	55.7	54.3	28.3	40.8
LLB-10	57.1	13.8	16.9	65.1	38.2
Richard Percy, Texas A&M University, College Station, Texas					
McNair 235	41.7	18.9	15.9	7.7	21.0
RP-1	41.0	4.2	0.0	76.1	30.3
RP-2	14.7	14.3	57.8	26.2	28.2
RP-3	29.6	2.1	31.5	13.5	19.2
RP-4	72.5	24.0	29.1	70.4	49.0
Rowden	88.9	58.3	43.9	65.0	64.0
RP-5	7.5	13.5	2.3	25.0	12.1
RP-6	---	4.0	13.3	26.7	14.7
RP-7	40.0	45.0	22.0	19.0	31.5
RP-8	37.0	59.1	27.6	36.0	39.9
McNair 235	51.3	23.6	3.3	11.3	22.4
RP-9	4.8	17.1	4.3	28.9	13.8

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Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
D. L. Van Horn, Northrup King Seed Co., Yuma, Arizona					
KNX-1	35.8	15.3	2.1	4.8	14.5
KNX-2	11.7	1.6	19.8	10.0	10.8
KNX-3	28.4	21.7	24.6	23.3	24.5
Rowden	62.2	57.1	65.9	50.0	58.8
KNX-4	30.0	14.3	26.9	18.6	22.4
KNX-5	63.0	35.0	4.7	27.6	32.6
KNX-6	40.4	18.0	50.0	3.0	27.8
KNX-7	49.4	23.9	57.1	21.0	37.8
McNair 235	39.4	8.3	18.4	1.6	16.9
KNX-8	53.5	42.0	3.8	11.7	27.8
KNX-9	24.6	26.7	20.0	16.9	22.0
KNX-10	37.7	17.8	4.3	19.0	20.4
Henry Webb, Coker's Pedigreed Seed Co., Hartsville, South Carolina					
C-1	20.2	11.9	11.9	1.2	11.3
Rowden	64.1	75.0	74.5	7.7	55.3
C-2	27.5	48.1	22.2	0.0	24.4
C-3	22.5	82.3	4.0	3.8	28.2
C-4	20.0	66.7	5.5	18.3	27.6
C-5	22.8	48.4	5.1	11.4	21.9
McNair 235	5.6	22.0	9.5	8.3	11.4
C-6	28.0	53.1	31.0	10.4	30.6
C-7	23.7	33.3	9.1	14.1	20.0
C-8	36.7	21.0	8.6	0.0	16.6
C-9	17.2	22.6	8.0	5.8	13.4
Rowden	93.1	42.6	55.4	42.9	58.5
C-10	37.2	19.3	4.2	23.7	21.1
A. G. Douglas, Hollandale Agricultural Services, Hollandale, Mississippi					
HAS-1201	20.7	21.4	5.7	8.9	14.2
HAS-1202	7.9	10.9	15.9	1.5	9.0
HAS-1203	21.4	14.3	2.0	13.3	12.8
McNair 235	8.2	5.5	4.2	3.5	5.4
HAS-1204	7.1	6.4	26.2	12.3	13.0
HAS-1205	11.0	5.8	16.5	18.4	12.9
HAS-1206	18.0	4.4	15.9	12.2	12.6
HAS-1207	34.4	4.8	19.2	24.6	20.8
Rowden	46.2	44.8	60.3	33.3	46.2
HAS-1208	6.1	33.4	15.9	11.1	16.6
HAS-1209	1.4	27.5	37.3	15.3	20.4
HAS-1210	5.7	7.7	14.0	5.3	8.2

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Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
John Green, Northrup King Seed Co., Leland, Mississippi					
KNX-1	14.1	11.1	9.7	8.5	10.8
McNair 235	40.7	21.7	5.4	3.9	17.9
KNX-2	16.7	7.1	39.0	10.3	18.3
KNX-3	12.2	16.4	5.1	14.9	12.2
KNX-4	32.4	10.7	14.8	2.9	15.2
KNX-5	10.6	10.3	28.0	2.6	12.9
Rowden	47.6	51.0	57.4	55.4	52.8
KNX-6	11.5	6.8	18.5	14.9	12.9
KNX-7	16.7	12.3	6.1	21.7	14.2
KNX-8	34.0	24.0	17.4	10.9	21.6
KNX-9	15.7	31.7	31.8	21.0	25.0
McNair 235	17.9	21.1	8.5	14.9	15.6
KNX-10	13.8	5.3	15.4	30.4	16.2
L. M. Verhalen, Oklahoma State University, Stillwater, Oklahoma					
OK-1	76.2	46.7	57.3	32.9	53.3
OK-2	45.6	11.1	28.8	39.5	31.2
OK-3	41.4	31.9	30.1	91.2	48.6
Rowden	70.2	67.9	65.7	89.6	73.4
OK-4	85.5	41.1	55.3	90.7	68.2
OK-5	55.7	58.5	67.9	58.1	60.0
OK-6	18.2	4.8	19.1	16.9	14.8
OK-7	18.2	32.7	17.5	68.9	34.3
McNair 235	12.3	17.8	15.2	21.1	16.6
OK-8	44.4	31.7	20.0	66.7	40.7
OK-9	14.4	19.7	17.6	15.9	16.9
OK-10	61.5	45.7	5.2	42.1	38.6
C. W. Manning, Stoneville Pedigreed Seed Co., Stoneville, Mississippi					
CWM-1	32.9	5.4	4.6	6.3	12.3
Rowden	59.1	23.7	7.6	90.5	45.2
CWM-2	13.3	19.8	31.1	10.1	18.6
CWM-3	25.0	13.5	8.1	26.0	18.2
CWM-4	20.3	4.5	13.3	25.0	15.8
CWM-5	9.5	5.9	14.4	35.8	16.4
McNair 235	15.5	13.3	13.8	6.2	12.2
CWM-6	32.9	3.7	5.0	13.0	13.6
CWM-7	3.0	38.2	21.3	9.3	18.0
CWM-8	19.7	5.1	1.5	19.4	11.4
CWM-9	10.5	4.4	10.5	9.6	8.8
Rowden	88.0	38.7	19.4	66.7	53.2
CWM-10	39.1	16.7	26.4	49.1	32.8

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Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Jack E. Jones, Louisiana State University, Baton Rouge, Louisiana					
JJ-1	14.3	6.3	24.6	35.4	20.2
JJ-2	11.7	1.8	1.7	42.9	14.5
JJ-3	32.1	9.5	0.0	31.2	18.2
McNair 235	11.2	18.8	4.6	10.5	11.3
JJ-4	17.6	8.1	6.1	36.7	17.1
JJ-5	27.1	1.5	21.7	5.7	14.0
JJ-6	2.4	19.5	18.5	4.6	11.2
JJ-7	29.8	9.5	4.4	33.3	19.2
Rowden	86.1	64.8	1.8	54.4	51.8
JJ-8	54.3	11.9	12.2	13.3	22.9
JJ-9	25.4	16.4	16.4	4.5	15.7
JJ-10	50.5	23.6	8.0	0.0	20.5
T. W. Culp, USDA-ARS, Pee Dee Experiment Station, Florence, South Carolina					
TWC-1	5.5	0.0	15.2	14.7	8.8
McNair 235	19.7	74.6	10.3	6.3	27.7
TWC-2	42.4	100.0	0.0	32.8	43.8
TWC-3	45.7	48.3	0.0	2.8	24.2
TWC-4	24.2	36.4	2.3	30.0	21.4
TWC-5	15.6	88.7	6.5	8.7	29.9
Rowden	91.2	98.0	16.7	79.7	71.4
TWC-6	26.0	12.9	0.0	29.1	17.0
TWC-7	33.8	24.7	13.9	11.1	20.9
TWC-8	15.2	2.6	3.0	17.9	9.7
TWC-9	13.0	24.4	4.3	20.7	15.6
McNair 235	9.0	30.8	5.8	23.5	17.3
TWC-10	20.2	40.6	0.0	10.7	17.9
R. L. Shepherd, USDA-ARS, Auburn University, Auburn, Alabama					
RLS-1	48.9	58.0	9.4	16.4	33.2
RLS-2	20.7	24.5	4.3	13.6	15.8
RLS-3	9.9	7.2	0.0	2.2	4.8
Rowden	75.5	40.8	32.2	54.2	50.7
RLS-4	41.0	5.9	61.8	23.4	33.0
RLS-5	21.1	4.4	12.8	19.3	14.4
RLS-6	18.8	5.8	4.9	19.6	12.3
RLS-7	34.2	16.4	7.0	9.5	16.8
McNair 235	41.9	9.6	1.0	6.0	14.6
RLS-8	14.8	20.0	3.1	0.0	9.5
RLS-9	28.7	21.0	26.5	13.7	22.5
RLS-10	37.7	20.5	4.0	1.8	19.9
RLS-11	41.6	0.0	21.6	5.5	17.2
Rowden	50.7	53.7	76.4	44.3	56.3
RLS-12	9.6	14.3	4.8	5.1	8.4

Regional Cotton Fusarium Wilt Test Results, 1982

Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
W. P. Sappenfield, Univ. of Mo. Delta Center, Portageville, Missouri					
MO-1	5.3	100.0	12.5	0.0	29.4
MO-2	15.8	4.3	11.3	3.3	8.7
MO-3	7.6	11.5	8.3	22.2	12.4
McNair 235	20.0	7.5	37.3	14.3	19.8
MO-4	6.2	2.7	14.0	3.2	6.5
MO-5	18.8	19.1	0.0	1.7	9.9
MO-6	6.7	34.6	5.0	12.7	14.8
MO-7	3.8	12.7	5.6	0.0	5.5
Rowden	79.7	46.4	73.0	42.9	60.5
MO-8	4.9	12.0	3.6	8.5	7.2
MO-9	8.2	15.8	35.5	12.1	17.9
MO-10	18.6	18.9	0.0	2.1	9.9
W. C. Johnson, Jr., Auburn University, Auburn, Alabama					
Stoneville 825	57.5	28.2	24.1	40.0	37.4
McNair 235	29.4	27.5	19.6	24.6	25.3
Stoneville 213	19.7	25.4	15.6	42.3	25.8
DES 56	27.6	16.3	5.7	22.8	18.1
Hancock	59.1	21.4	23.1	63.3	41.7
DES 422	55.6	3.8	3.5	33.8	24.2
Rowden	79.1	48.7	34.6	96.4	64.7
Delcot 311	17.6	5.4	7.1	7.1	9.3
Coker 80903	7.4	3.8	5.1	14.5	7.7
Deltapine 26	22.0	0.0	13.0	0.0	8.8
Coker 310	31.9	16.4	11.6	12.2	18.0
McNair 235	21.4	9.0	17.5	1.8	12.4
Coker 304	26.7	40.0	3.2	9.0	19.7
Deltapine 61	14.3	47.1	13.5	14.3	22.3
Coker 315	13.9	42.9	0.0	17.0	18.4
Deltapine 62	68.1	55.8	10.9	54.2	47.2
Rowden	54.3	74.1	9.2	64.9	50.6
Deltapine 55	39.2	0.0	2.9	19.2	15.3
Coker 3131	25.7	20.0	11.1	27.1	21.0
Deltapine 41	31.2	27.3	9.4	6.1	18.5
Coker 208	44.9	28.1	8.8	9.2	22.8
McNair 235	20.0	19.3	11.6	14.5	16.4
Deltapine 90	12.3	28.1	0.0	3.2	10.9
Stoneville 506	17.0	26.1	1.3	1.5	11.5
Deltapine 6150	16.0	21.4	6.0	4.4	12.0
McNair 220	16.0	24.1	16.1	38.5	23.7
Rowden	70.0	45.2	4.7	55.0	43.7

*Information contained herein is available to all persons regardless
of race, color, sex, or national origin.*