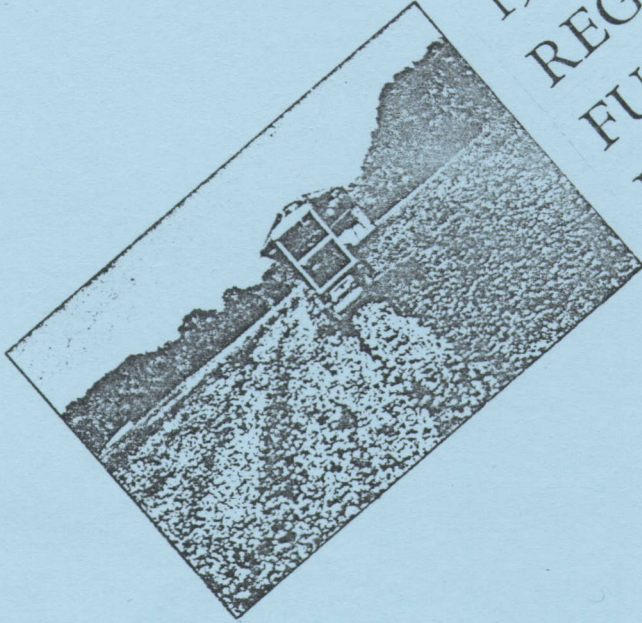


1983

REGIONAL COTTON
FUSARIUM WILT
REPORT



AGRONOMY AND SOILS DEPARTMENTAL SERIES NO. 86
ALABAMA AGRICULTURAL EXPERIMENT STATION
GALE A. BUCHANAN, DIRECTOR
AUBURN UNIVERSITY, ALABAMA
NOVEMBER, 1983

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

1983 REGIONAL COTTON FUSARIUM WILT REPORT¹

A. J. Kappelman, Jr.²

Cultivars and elite breeding lines submitted by 25 cooperators were evaluated for fusarium wilt resistance under field conditions at the Plant Breeding Unit, Tallassee, Alabama. These entries were grown on a Wickham sandy loam soil highly infested with both the fusarium wilt fungus (Fusarium oxysporum Schlect. f. vasinfectum [Atk.] Snyder & Hans.) and root-knot nematodes (Meloidogyne spp.)

Plots were 40-inch wide bedded rows, 30 feet in length, separated by 6-foot alleys. Four replications of the test entries and checks, arranged in a block design, were evaluated. Both susceptible ('Rowden') and resistant ('McNair 235') cultivars were included as gradient checks. Rowden was planted in row 5 (15, 25, ..., 255) and McNair 235 in row 10 (20, 30, ..., 250), and then in every tenth row thereafter throughout the test. Plots were planted May 2 but not thinned to three or four plants per foot until June 8. Initial live plant counts were made on June 14. Wilted plants were counted, removed, and recorded on July 14, August 10, and September 7, and remaining live plants counted and recorded on September 8. Percent wilted plants per plot were then determined and mean wilting for a given entry calculated.

The incidence of wilt varied greatly across replications. Average wilting of the susceptible Rowden in Rep 1 was 82.9 percent and varied from

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

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

98.6 to 55.3 percent. The mean incidence of wilting in the resistant check in this replication was 17.4 percent but varied from 3.7 to 42.3 percent; thus, there was no overlap in variation between these two check cultivars. As a result, although the degree of wilting of a given entry may seem high, some differentiation should be evident. In contrast to the high wilt expression in Rep 1, in Reps 2, 3, and 4 the mean wilting of Rowden was only 40.2 percent but varied from a low of 1.4 percent to a high of 97.1 percent wilted plants per row. In these three replications, mean wilting of McNair 235 was 8.0 percent but varied from 0 to 28.1 percent. Therefore, critical evaluation of a given entry should be made relative to the checks closest to the entry within each replication. Evaluation of breeding progress or evaluation of entries over years should be made only between the relative value of this entry and that of the closest susceptible check rows for each year.

Entries submitted by W. C. Johnson are commonly-grown cultivars or advanced commercial materials, while entries submitted by A. J. Kappelman are recently-released breeding lines. Thus, these entries 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.

1983 Regional Cotton Fusarium Wilt Test,
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Mason Hawkins, Ranger Seed Co., Box 1288, Tahoka, TX 79373					
RSC-1	88.4	12.4	0	14.1	28.7
RSC-2	66.2	0	29.1	6.9	25.6
RSC-3	74.3	4.7	7.8	19.4	26.6
RSC-4	67.5	11.4	8.3	5.4	23.2
Rowden	89.0	19.4	73.9	18.2	50.1
RSC-5	29.5	5.2	19.0	15.3	17.2
RSC-6	55.6	10.0	54.5	11.8	33.0
RSC-7	44.3	9.6	22.2	19.0	23.8
RSC-8	58.6	2.3	25.3	6.0	23.0
McNair 235	10.0	0	0	4.0	3.5

Keith R. Jones, Delta & Pine Land Co., PO Box 157, Scott, MS 38772

DPL-1	18.7	14.7	10.0	26.9	17.6
DPL-2	67.2	5.1	24.1	7.1	25.9
DPL-3	31.5	11.0	26.9	12.5	20.5
DPL-4	17.5	15.2	64.7	10.2	27.0
Rowden	81.2	25.8	76.6	13.4	49.2
DPL-5	73.6	10.4	43.8	22.2	37.5
DPL-6	13.8	4.6	5.8	5.6	7.4
DPL-7	21.2	0	33.3	27.1	20.4
DPL-8	15.4	6.6	7.5	14.3	11.0
McNair 235	13.4	12.5	3.7	7.6	9.3

Jerry D. Carroll, Terra Seed Co., Rt. 1, Box 110, Lubbock, TX 79401

JDC-1	27.7	6.7	10.7	15.1	15.0
JDC-2	50.0	3.5	46.9	7.1	26.9
JDC-3	33.7	21.6	17.8	24.5	24.4
JDC-4	39.3	11.7	32.8	30.3	28.5
Rowden	57.3	14.6	42.0	54.1	42.0
JDC-5	6.5	8.0	29.7	67.3	27.9
JDC-6	38.6	6.2	25.9	42.1	28.2
JDC-7	56.0	0	1.4	23.9	20.3
JDC-8	46.5	6.6	1.5	30.0	21.2
McNair 235	14.5	28.0	0	5.1	11.9

John M. Green, Northrup King Co., PO Drawer 272, Leland, MS 38756

JMG-1	65.2	8.5	7.0	36.4	29.2
JMG-2	73.6	1.9	2.9	7.5	21.4
JMG-3	93.8	27.7	1.7	22.6	36.4
JMG-4	34.1	9.7	20.9	24.1	22.2
Rowden	96.0	34.9	78.2	79.2	72.0
JMG-5	85.1	13.0	70.6	20.7	47.4
JMG-6	51.8	14.8	66.2	20.5	38.3
JMG-7	9.5	9.9	15.2	2.9	9.4
JMG-8	20.0	2.8	43.5	4.2	17.6
McNair 235	18.2	18.8	21.5	12.2	17.7

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
L. L. Barton, Rogers Delinted Cottonseed Co., P.O. Drawer 1340, Waco, TX 76703					
LLB-1	16.4	26.6	36.7	34.9	28.6
LLB-2	6.5	15.2	56.7	6.2	21.2
LLB-3	32.9	8.4	26.4	11.1	19.7
LLB-4	53.1	13.9	20.7	14.3	25.5
Rowden	55.3	16.2	97.1	67.1	58.9
LLB-5	40.9	4.1	63.2	54.8	40.8
LLB-6	40.5	6.4	32.1	19.6	24.6
LLB-7	92.0	11.4	64.8	26.2	48.6
LLB-8	95.4	10.9	38.3	68.4	53.2
McNair 235	19.4	22.8	6.2	15.6	16.0
L. S. Bird, Dept. of Plant Science, Texas A&M Univ., College Sta. TX 77843					
LSB-1	54.1	5.8	3.6	10.7	18.6
LSB-2	53.8	12.1	51.2	29.4	36.6
LSB-3	66.7	13.0	44.9	6.1	32.7
LSB-4	32.5	8.2	25.0	20.0	21.4
Rowden	84.9	9.9	90.9	43.7	57.4
LSB-5	36.5	20.8	32.4	6.3	24.0
LSB-6	50.0	13.2	38.8	9.3	27.8
LSB-7	50.7	18.4	25.0	7.5	25.4
LSB-8	37.5	14.0	10.5	6.1	17.0
McNair 235	16.3	12.1	4.0	7.0	9.8
Jerry L. Baker, Pioneer Hi-Bred International, Inc., Rt. 3, Vernon, TX 76384					
PR-1	23.7	27.3	15.4	6.2	18.2
PR-2	13.0	1.6	41.7	9.1	16.4
PR-3	8.9	0	2.5	6.0	4.4
PR-4	42.4	14.5	5.6	13.8	19.1
Rowden	76.8	18.6	73.5	14.1	45.8
PR-5	60.0	18.7	13.7	33.8	31.6
PR-6	21.8	4.0	10.8	15.2	13.0
PR-7	25.6	8.5	1.0	3.8	9.7
PR-8	28.8	15.2	16.4	19.7	20.0
McNair 235	15.9	6.8	12.1	1.9	9.2
Kamal El-Zik, Dept. of Plant Sciences, Texas A & M Univ., College Sta., TX 77843					
KME-1	22.2	2.6	22.4	15.8	15.8
KME-2	31.0	19.1	7.5	18.6	19.0
KME-3	24.0	0	4.0	8.1	9.0
KME-4	13.6	2.3	0	40.3	14.0
Rowden	64.4	38.3	48.3	37.3	47.0
KME-5	11.1	12.8	0	36.4	15.0
KME-6	38.7	19.1	23.4	46.3	31.9
KME-7	86.4	17.4	6.8	42.9	38.4
KME-8	68.8	20.0	12.1	21.4	30.6
McNair 235	38.5	0	17.0	7.8	15.8

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Robert R. Bridge, MSU Delta Branch Exp. Sta., PO Box 197, Stoneville, MS 38776					
RRB-1	53.6	2.9	19.3	6.8	20.6
RRB-2	26.9	11.4	30.0	12.8	20.3
RRB-3	24.0	15.4	40.0	27.6	26.8
RRB-4	21.4	1.5	25.4	23.7	18.0
Rowden	83.1	25.6	54.8	35.6	49.8
RRB-5	13.1	11.1	36.4	6.1	16.7
RRB-6	14.0	6.6	0	23.1	10.9
RRB-7	22.2	10.4	7.9	18.2	14.7
RRB-8	8.3	8.6	13.0	8.2	9.5
McNair 235	--	8.5	17.4	6.9	10.9

Laval M. Verhalen, Dept. of Agronomy, Oklahoma State Univ., Stillwater, OK 74078

OKLA-1	22.1	2.6	24.4	15.8	16.2
OKLA-2	53.6	19.1	0	18.8	22.9
OKLA-3	43.9	18.7	16.7	9.8	22.3
OKLA-4	30.4	6.3	46.2	8.6	22.9
Rowden	64.0	27.5	42.2	24.5	39.6
OKLA-5	24.1	9.2	8.6	9.8	12.9
OKLA-6	48.0	1.6	50.0	18.9	29.6
OKLA-7	8.8	9.4	59.5	2.8	20.1
OKLA-8	43.8	29.9	60.0	6.5	35.0
McNair 235	24.7	4.6	3.8	5.8	9.7

C. W. Manning, Stoneville Pedigreed Seed Co., PO Box 167, Stoneville, MS 38776

SPSCO-1	38.5	14.9	17.5	13.0	21.0
SPSCO-2	68.9	4.5	17.2	19.4	27.5
SPSCO-3	39.5	14.8	20.9	19.1	23.6
SPSCO-4	52.9	34.0	13.0	21.3	30.3
Rowden	81.1	46.4	74.7	16.7	54.7
SPSCO-5	17.1	40.5	7.8	1.9	16.8

Richard Percy, Dept. Plant Sci., Texas A & M Univ., College Station, TX 77843

RP-1	66.7	56.7	0	7.1	32.6
RP-2	27.8	10.1	9.1	5.3	13.1
RP-3	59.4	21.1	8.0	5.2	23.4
McNair 235	21.8	6.0	11.8	3.1	10.7
RP-4	25.0	8.9	23.5	20.0	19.4

W. C. Johnson, Dept. Agronomy and Soils, Auburn University, AL 36849

Deltapine NSL	30.4	26.8	6.4	5.2	17.2
Coker 310	54.7	13.5	27.5	14.3	27.5
Delcot 311	16.7	14.1	10.4	2.5	10.9
Rowden	91.8	59.4	66.0	16.9	58.5

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
W. C. Johnson, Dept. Agronomy and Soils, Auburn University, AL (cont.)					
DES 422	24.3	10.3	15.3	10.4	15.1
Coker 315	18.9	29.5	44.4	16.9	27.4
McNair 220	14.8	26.3	15.9	16.7	18.4
Stoneville 825	11.9	35.2	60.8	14.5	30.6
McNair 235	19.8	0	16.7	7.8	11.1
Stoneville 213	61.9	15.4	4.6	9.7	22.9
Deltapine 41	10.0	8.9	4.9	13.0	9.2
Stoneville 506	23.6	5.6	8.6	14.0	13.0
Coker 3131	3.7	16.9	40.2	12.3	18.3
Rowden	97.0	50.0	27.4	50.0	56.1
Deltapine 150	11.9	30.6	6.7	12.1	15.3
Coker 208	42.4	36.6	2.8	16.6	24.6
Deltapine 90	25.7	6.2	1.9	3.9	9.4
Coker 304	69.7	16.3	16.1	10.7	28.2
McNair 235	8.6	12.8	4.7	2.1	7.0
Stoneville 1181	73.5	29.0	19.6	2.7	31.2
Deltapine 61	35.7	12.5	3.1	4.8	14.0
Deltapine 733	82.4	59.3	11.1	23.9	44.2
Deltapine 102	29.3	45.8	30.4	38.6	36.0
Rowden	86.1	75.0	27.6	21.1	52.4

Aubrey Germany, Bobshaw Pedigreed Seed Co., PO Box 167, Stoneville, MS 38776

BPSCO-1	16.4	22.8	22.9	5.7	17.0
BPSCO-2	13.3	8.0	4.6	4.2	7.5
BPSCO-3	25.8	17.6	9.7	29.3	20.6
BPSCO-4	17.6	24.7	7.0	11.4	15.2
McNair 235	16.7	12.0	7.4	9.5	11.4
BPSCO-5	58.6	25.8	18.2	27.0	32.4

A. G. Douglas, Hollandale Agric. Serv., PO Box 397, Hollandale, MS 38748

HAS-1301	30.2	14.1	6.8	2.9	13.5
HAS-1302	23.7	6.8	14.3	7.1	13.0
HAS-1303	61.7	14.8	1.1	14.7	12.1
Rowden	95.2	9.0	55.0	17.0	44.0
HAS-1304	0	4.0	5.0	7.1	4.0
HAS-1305	0	25.0	25.0	42.1	23.0
HAS-1306	50.0	18.5	48.3	41.7	39.6
HAS-1307	83.3	16.7	11.4	15.7	31.8
McNair 235	5.6	4.1	15.2	8.3	8.3
HAS-1308	0	5.6	0	6.0	2.9

Delbert C. Hess, Cargill Seed Division, PO Box 1630, Plainview, TX 79072

DCH-1	2.9	20.3	1.2	15.0	9.8
DCH-2	5.2	10.6	2.4	20.0	9.6

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Delbert C. Hess, Cargill Seed Division, PO Box 1630, Plainview, TX (cont.)					
DCH-3	15.6	16.5	11.8	2.4	11.6
Rowden	80.6	55.4	24.1	44.3	51.1
DCH-4	226.	16.4	13.2	15.1	16.8
DCH-5	46.9	27.5	7.4	16.9	24.7
DCH-6	36.4	1.7	16.1	19.4	18.4
DCH-7	20.9	5.1	0	16.0	10.5
McNair 235	42.3	3.9	9.8	3.9	15.0
DCH-8	64.0	14.1	4.7	16.7	24.9

W. P. Sappenfield, Agron. Dept., Univ. of Mo., Delta Ctr., PO Box 160,
Portageville, MO 63873

MO-1	34.4	5.8	9.5	12.9	15.6
MO-2	21.8	13.6	0	7.0	10.6
MO-3	18.6	26.8	0	4.2	12.4
Rowden	82.5	91.0	60.8	27.3	65.4
MO-4	24.5	23.1	12.2	2.3	15.5
MO-5	18.6	9.2	6.7	20.5	13.8
MO-6	12.7	13.1	2.0	14.6	10.6
MO-7	17.1	9.1	7.3	8.2	10.4
McNair 235	4.8	8.7	7.8	8.4	7.4
MO-8	4.3	4.7	7.2	4.5	5.4

Carl A. Moosberg, Gro Agri. Seed Co., PO Box 1656, Lubbock, TX 79408

GA-1	84.3	2.5	12.8	14.3	28.5
GA-2	18.9	18.3	29.9	23.5	22.6
GA-3	35.2	1.8	22.2	20.9	20.0
Rowden	95.7	86.0	17.1	1.4	50.0
GA-4	34.5	5.2	16.5	20.3	19.1
GA-5	29.9	7.3	2.2	8.1	11.9
GA-6	28.4	24.2	20.7	10.7	21.0
GA-7	83.0	7.0	11.9	28.6	32.6
McNair 235	28.2	6.6	5.4	5.7	11.5

J. B. Weaver, Dept. of Agronomy, Univ. of Georgia, Athens, GA 30602

JBW-1	29.4	24.3	5.4	21.6	20.2
JBW-2	19.4	14.3	1.7	11.4	11.7
JBW-3	5.2	1.2	12.5	22.4	10.3
JBW-4	34.1	6.2	1.7	39.7	20.4
Rowden	79.6	39.7	7.6	88.5	53.8
JBW-5	6.6	9.8	0	4.3	5.2
JBW-6	1.7	10.5	7.4	4.5	6.0
JBW-7	39.7	15.0	27.4	2.7	21.2
JBW-8	15.5	3.1	25.0	35.1	19.7
McNair 235	15.8	4.6	9.6	1.2	7.8

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
T. W. Culp, USDA-ARS, PeeDee Expt. Sta., Florence, SC 29501					
TWC-1	44.6	36.4	2.5	14.1	24.4
TWC-2	50.9	10.5	3.4	15.0	20.0
TWC-3	90.8	11.0	4.5	12.2	29.6
TWC-4	55.0	25.7	11.1	0	23.0
Rowden	80.7	38.5	10.3	20.0	37.4
TWC-5	75.0	26.6	11.1	4.2	29.2
TWC-6	48.5	11.3	1.4	7.5	17.2
TWC-7	0	22.0	27.7	38.3	22.0
TWC-8	14.3	18.2	7.0	10.8	12.6
McNair 235	4.8	8.4	10.4	9.6	8.3

Loyd Langford, Coker's Pedigreed Seed Co., Rt 1, Box 152, Lubbock, TX 79408

L-1	9.8	28.0	29.2	8.6	18.9
L-2	27.0	18.8	4.5	6.2	14.1
L-3	40.0	38.8	9.3	13.0	25.3
L-4	34.8	21.4	4.7	28.1	22.2
Rowden	98.6	21.5	29.3	12.3	40.4
L-5	3.5	16.3	0	2.3	5.5
L-6	25.7	18.0	33.3	6.9	21.0
L-7	17.3	29.5	11.3	1.5	14.9
L-8	15.3	41.8	28.6	4.0	22.4
McNair 235	14.1	13.3	0	6.8	8.6

R. L. Shepherd, USDA-ARS, Crop Science Res. Unit, Auburn Univ., AL 36849

RLS-1	10.5	21.7	47.6	50.0	32.4
RLS-2	19.2	9.7	0	13.4	10.6
RLS-3	10.9	14.9	7.3	1.1	8.6
RLS-4	11.8	1.2	14.8	10.7	9.6
Rowden	85.5	80.8	38.5	8.1	53.2
RLS-5	2.8	11.3	1.0	3.0	4.5
RLS-6	55.6	12.2	4.6	29.7	25.5
RLS-7	17.7	14.8	8.5	11.1	13.0
RLS-8	18.8	8.4	1.7	16.7	11.4
McNair 235	13.6	3.0	7.0	10.6	8.6
RLS-9	7.1	10.7	5.9	9.7	8.4
RLS-10	16.4	19.6	9.1	6.2	12.8

Henry Webb, Coker's Pedigreed Seed Co., PO Box 340, Hartsville, SC 29550

C-1	10.0	5.4	1.0	23.5	10.0
C-2	59.5	26.3	12.6	52.2	37.6
Rowden	89.8	90.9	4.1	17.7	50.6
C-3	10.8	30.5	1.0	13.3	13.9
C-4	72.0	22.5	15.6	4.5	28.6
C-5	50.6	15.8	24.3	22.7	28.4

1983 Regional Cotton Fusarium Wilt Test
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Henry Webb, Coker's Pedigreed Seed Co., PO Box 340, Hartsville, SC (cont.)					
C-6	56.3	12.5	11.6	20.6	25.2
McNair 235	3.7	8.3	10.7	5.0	6.9
C-7	18.0	11.8	2.4	12.3	11.1
C-8	33.7	8.5	31.5	5.4	19.8

Jack E. Jones, Dept. of Agronomy, Louisiana State Univ., Baton Rouge, LA 70803

JJ-1	4.9	11.4	1.0	4.5	5.4
JJ-2	15.5	13.4	1.0	0	7.5
Rowden	86.4	62.8	29.3	28.6	51.8
JJ-3	46.2	34.3	8.8	16.4	26.4
JJ-4	27.7	35.4	9.6	18.3	22.8
JJ-5	31.2	1.7	0	9.8	10.7
JJ-6	50.0	5.7	22.7	17.7	24.0
McNair 235	27.3	2.8	1.3	9.8	10.3
JJ-7	48.0	15.6	15.5	17.6	24.2
JJ-8	33.8	10.6	3.3	9.9	14.4

A. J. Kappelman, Jr., USDA-ARS, Crop Science Res. Unit, Auburn Univ., AL 36849

Auburn OK fg-1	30.0	2.7	1.0	3.4	9.3
Auburn OK fg-2	37.5	2.1	9.8	0	12.4
Rowden	90.8	19.6	45.1	16.4	43.0
Auburn OK fg-3	17.2	9.6	3.1	8.1	9.5
Auburn OK-4	19.0	30.9	3.6	6.1	14.9
Auburn OK-8	5.9	2.9	13.9	0	5.7
Auburn OK-14	12.4	9.8	32.6	8.1	15.7
McNair 235	29.7	13.8	8.3	2.8	13.6
Auburn 73B-1	0	19.4	23.1	5.3	12.0
Auburn 73B-2	13.0	7.0	6.5	4.2	7.7
Auburn 73B-5	19.3	47.1	1.3	21.4	22.3
Auburn 73B-12	48.3	0	1.7	6.9	14.2
Rowden	82.4	17.9	71.1	15.9	46.8

