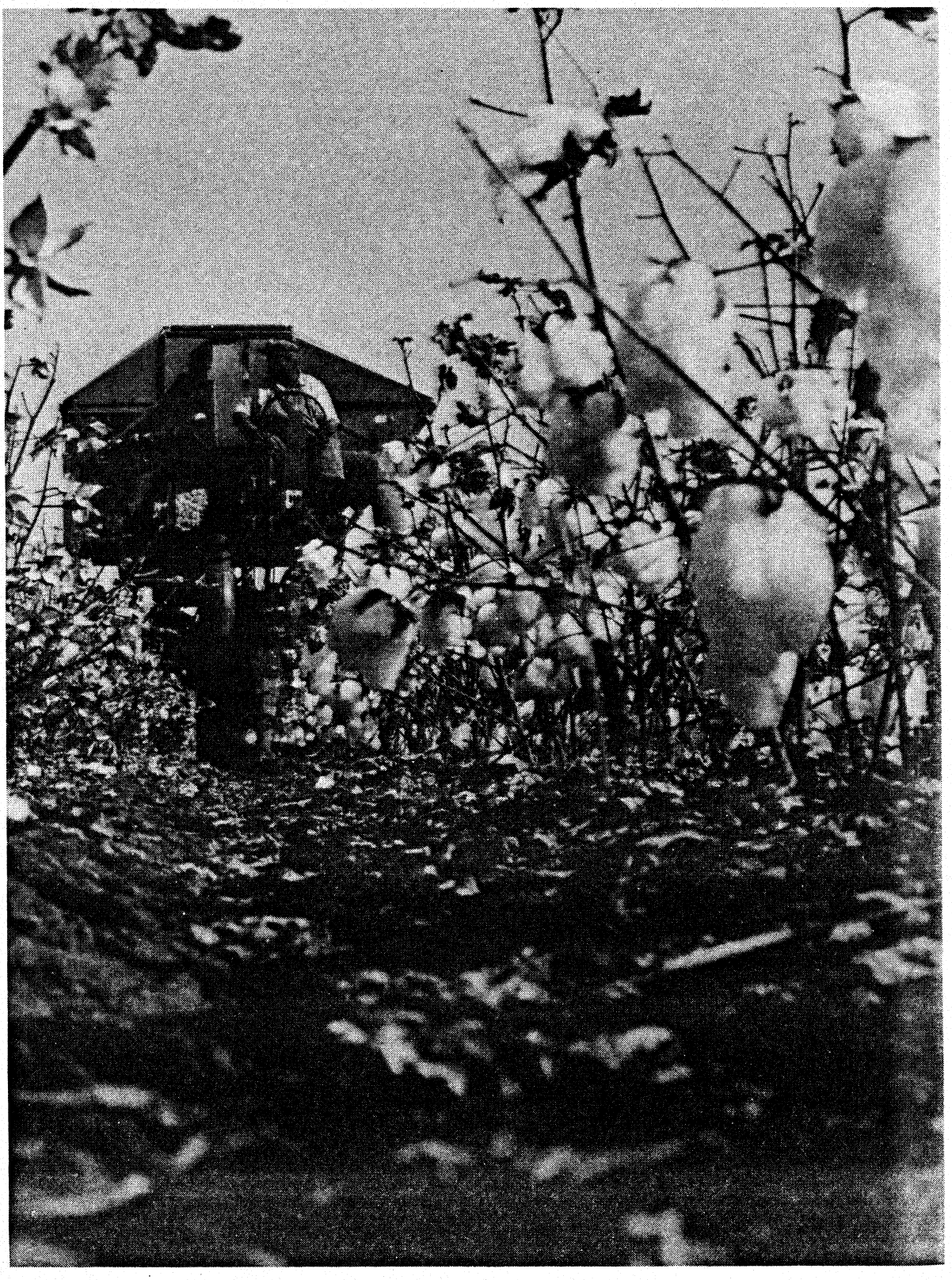
Fusarium Wilt Report

1986 Regional Cotton



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1986 REGIONAL COTTON FUSARIUM WILT REPORT[1]

W. C. Johnson[2]

Cotton cultivars and elite breeding lines submitted by 20 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 highly infested with both the fusarium wilt fungus (Fusarium oxysporum Schlect. f. vasinfectum [Atk.] Snyd. & 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 checks. Rowden was planted in row 5 and every tenth row thereafter (15, 25,..., 215) and McNair 235 in row 10 and every tenth row thereafter (20, 30,..., 220) throughout the test. Plots were planted May 5 and thinned to three or four plants per foot on June 20. Initial live plant counts were also made on that date. Wilted plants were counted, removed, and recorded on July 18, August 8, August 20, and September 12. The remaining live plants were also counted and recorded on September 12.

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[1] This report is a joint contribution between USDA-ARS, Crop Science Research Laboratory, Mississippi State, Mississippi, and the Alabama Agricultural Experiment Station, Auburn University, Alabama.

[2] Professor of Agronomy and Soils.

Percent wilted plants per plot were then determined and mean wilting for a given entry calculated.

The incidence of wilt was high within the experimental area and was not excessively variable, appearing to be more or less randomly distributed. Average wilting of the susceptible Rowden was 79.2, 81.3, 80.5, and 82.6 percent for each of the four replications. The mean incidence of wilting in the resistant check, McNair 235, was 21.3, 26.9, 16.8, and 20.5 percent in the corresponding replications. The long term average for McNair 235 is 12 percent wilting. 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. 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.

ACKNOWLEDGMENT

The author express appreciation to A.J. Kappelman, Jr., retired, for advice and technical assistance in conducting the test and preparing this report.

1986 Regional Cotton Fusarium Wilt Test,
Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication 1	2	3	4	Mean
P . M. Thaxton, Dept. of Plant Path., Texas A&M, College Station, TX 77843-2132					
PMT-1	48	29	41	76	48.5
PMT-2	76	70	18	57	55.2
PMT-3	36	11	56	42	36.2
PMT-4	63	84	90	96	83.2
Rowden	85	90	96	87	89.5
PMT-5	16	14	10	21	15.2
PMT-6	38	1	12	24	18.8
PMT-7	54	14	47	44	39.8
PMT-8	33	26	45	26	32.5
McNair 235	8	6	55	42	27.8
Lynn McDonald, Dir. of Research, Stoneville Pedigreed Seed Co., P.O. Box 167, Stoneville, MS 38776					
1	89	45	65	89	72.0
2	86	74	41	56	64.2
3	60	38	33	71	50.5
4	65	64	81	84	73.5
Rowden	85	88	97	78	87.0
5	44	12	33	58	36.8
6	34	39	50	34	39.2
7	32	81	59	82	63.5
8	52	63	48	65	57.0
McNair 235	55	55	24	20	38.5

1986 Regional Cotton Fusarium Wilt Test,
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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
David Bush, Rogers Delinted Cotton Seed Co., P.O. Drawer 1340, Waco, TX 76703					
DLB 1	96	41	77	61	68.8
DLB 2	86	12	68	71	59.2
DLB 3	89	51	96	83	79.8
DLB 4	57	41	71	35	51.0
Rowden	65	92	100	74	82.8
DLB 5	35	56	79	58	57.0
DLB 6	39	30	85	32	46.5
DLB 7	19	7	21	12	14.8
DLB 8	33	81	84	54	63.0
McNair 235	16	16	30	19	20.2
Gene Douglas, Hollandale Agricultural Ser., P.O. Box 397, Hollandale, MS 38748					
1601	1	20	19	8	12.0
1602	12	22	10	9	13.2
1603	53	58	56	7	43.5
1604	4	2	17	13	9.0
Rowden	72	99	92	84	86.8
1605	9	9	22	33	18.2
1606	42	71	25	50	47.0
1607	38	17	56	43	38.5
1608	64	50	60	33	51.8
McNair 235	14	18	54	2	22.0

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
R.R. Bridge, Delta Branch Exp. Sta., P.O. Box 197, Stoneville, MS 38776					
RRB-1	53	36	10	24	30.8
RRB-2	33	1	18	11	15.8
RRB-3	86	5	14	14	29.8
RRB-4	62	66	34	75	59.2
Rowden	66	96	72	82	79.0
RRB-5	3	2	23	21	12.2
RRB-6	23	11	25	30	22.2
RRB-7	73	57	56	37	55.8
RRB-8	48	76	33	65	55.5
McNair 235	23	40	3	14	20.0
John Green, 101 Sycamore St., Leland, MS 38756					
NK-1	59	48	11	41	39.8
NK-2	17	14	15	36	20.5
NK-3	29	66	47	77	54.8
NK-4	11	24	9	5	12.2
Rowden	89	100	92	83	91.0
NK-5	21	11	19	10	15.2
NK-6	18	24	13	8	15.8
NK-7	44	12	18	7	20.2
NK-8	10	0	11	10	7.8
McNair 235	52	15	10	34	27.8
Kamal M. El-Zik, Dept. of Plant Path., Texas A&M, College Station, TX 77843-2132					
KME-1	24	69	3	36	33.0
KME-2	39	39	25	56	39.8
KME-3	32	39	6	53	32.5
KME-4	35	20	4	7	16.5
Rowden	90	86	30	97	75.8
KME-5	48	62	12	36	39.5
KM-6	78	46	28	24	44.0
KME-7	69	60	21	21	42.8
KME-8	37	39	44	68	47.0
McNair 235	42	13	2	22	19.8

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
Shelby H. Baker, Costal Plain Exp. Station, P.O. Box 748, Tifton, GA 31793-0748					
GAT-1	55	15	8	20	24.5
GAT-2	69	26	0	33	32.0
GAT-3	54	32	2	32	30.0
GAT-4	40	31	3	23	24.2
Rowden	89	45	49	78	65.2
GAT-5	32	54	33	29	37.0
GAT-6	42	28	13	50	33.2
GAT-7	36	31	8	32	26.8
GAT-8	14	14	13	31	18.0
McNair 235	34	14	6	22	19.0
Jerry Rice, Cargill Seed Division, Box 1630, Plainview, TX 79072					
1	20	23	3	45	22.8
2	3	25	1	11	10.0
3	60	20	6	28	28.5
4	13	11	6	42	17.2
Rowden	80	84	86	76	81.5
5	23	9	0	10	10.5
6	20	13	2	11	11.5
7	18	100	0	23	35.2
8	23	79	6	45	38.2
McNair 235	24	83	5	35	36.8
J.B. Weaver Jr., Dept. of Agronomy, Univ. of Georgia, Athens, GA 30602					
1	35	27	3	48	28.2
2	53	23	13	13	25.5
3	24	8	6	60	24.5
4	42	65	17	72	49.0
Rowden	72	100	77	82	82.8
5	0	13	1	5	4.8
6	0	43	2	12	14.2
7	13	36	6	12	16.8
8	24	8	9	13	13.5
McNair 235	15	51	4	5	18.8

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
Carl A. Moosberg, Gro Agri Seed Co., P.O. Box 1656, Lubbock, TX 79408					
GA-1	33	63	1	10	26.8
GA-2	47	58	58	54	54.2
GA-3	27	14	0	22	15.8
GA-4	7	27	4	22	15.0
Rowden	55	86	71	97	77.2
GA-5	8	10	1	48	16.8
GA-6	-	-	-	0	-
GA-7	-	-	-	50	-
GA-8	11	0	7	0	4.5
McNair 235	21	85	3	1	27.5
Keith R. Jones, Delta & Pine Land Co., P.O. Box 157, Scott, MS 38772					
1	6	61	0	5	18.0
2	0	50	2	8	15.0
3	27	29	14	25	23.8
4	14	29	4	13	15.0
Rowden	78	100	79	26	70.8
5	5	42	2	98	36.8
6	51	18	10	53	33.0
7	72	59	21	37	47.2
8	86	59	28	26	49.8
McNair 235	15	35	5	26	20.2
Gary L. Rea, Terra Seed Co., P.O. Box 10121, Lubbock, TX 79408					
TSC-1	26	36	6	64	33.0
TSC-2	58	37	8	63	41.5
TSC-3	36	2	21	28	21.8
TSC-4	73	22	87	65	61.8
Rowden	100	81	87	97	91.2
TSC-5	28	4	12	46	22.5
TSC-6	3	2	35	27	16.8
TSC-7	3	2	4	32	10.2
TSC-8	3	6	6	37	13.0
McNair 235	8	5	5	17	8.8

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
Fred Bourland, Dept. of Agronomy, P.O. Box 5248, Miss. State, MS 39762					
FMB-1	36	34	5	62	34.2
FMB-2	19	5	5	30	14.8
FMB-3	25	20	13	15	18.2
FMB-4	32	6	2	20	15.0
Rowden	100	67	75	100	85.5
FMB-5	27	14	22	23	21.5
FMB-6	23	14	16	9	15.5
FMB-7	21	37	10	75	35.8
FMB-8	32	13	13	26	21.0
McNair 235	16	33	1	12	15.5
Laval M. Verhalen, Dept. of Agronomy, Oklahama State Univ., Stillwater, OK 74078					
OKLA-1	8	46	18	8	20.0
OKLA-2	8	10	29	17	16.0
OKLA-3	9	0	0	4	3.2
OKLA-4	4	35	11	14	16.0
Rowden	55	94	91	88	82.0
OKLA-5	45	67	46	63	55.2
OKLA-6	33	53	23	44	38.2
OKLA-7	1	1	5	3	2.5
OKLA-8	63	73	69	66	67.8
McNair 235	2	20	14	21	14.2
Mason Hawkins, Ranger Seed Co., Box 1288, Tahoka, TX 79373					
RSC-1	9	14	2	53	19.5
RSC-2	12	33	16	66	31.8
RSC-3	59	82	14	36	47.8
RSC-4	29	58	20	37	36.0
Rowden	78	99	89	96	90.5
RSC-5	15	27	21	35	24.5
RSC-6	16	36	0	21	18.2
RSC-7	54	13	5	56	32.0
RSC-8	43	46	42	67	49.5
McNair 235	27	24	18	28	24.2

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
Jack E. Jones, Dept. of Agronomy, LSU, Baton Rouge, LA 70803-2110					
JJ-1	6	20	14	13	13.2
JJ-2	0	23	9	5	9.2
JJ-3	0	8	1	8	4.2
JJ-4	0	5	16	5	6.5
Rowden	90	29	70	100	72.2
JJ-5	5	3	4	6	4.5
JJ-6	0	0	8	50	14.5
JJ-7	31	5	54	44	33.5
JJ-8	8	0	33	16	14.2
McNair 235	11	20	29	21	20.2
Henry W. Webb, Coker's Pedigreed Seed Co., Hartsville, SC 29505					
1	42	8	47	52	37.2
2	14	16	48	37	28.8
3	18	0	25	77	30.0
4	42	0	59	71	43.0
Rowden	92	31	100	89	78.0
5	21	5	16	72	28.5
6	16	18	31	45	27.5
7	12	5	10	42	17.2
8	6	36	26	56	31.0
McNair 235	18	1	11	35	16.2
Joel Mahill, Gro Agri. Seed Co., Lubbock, TX 79408					
1	59	27	43	37	41.5
2	31	4	49	31	28.8
3	36	5	55	21	29.2
4	19	6	62	39	31.5
Rowden	71	94	95	47	76.8
5	16	12	76	76	45.0
6	30	12	24	13	19.8
7	50	10	22	27	27.2
8	9	11	14	20	13.5
McNair 235	18	10	23	17	17.0

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Test entry designation	Percent wilt by replication 1	2	3	4	Mean
W.C. Johnson, Dept. of Agronomy and Soils, Auburn University, AL 36849					
Coker 80-118	10	11	23	12	14.0
Deltapine 90	44	20	26	22	28.0
Stoneville 825	26	51	98	81	64.0
Delcot 344	8	4	23	15	12.5
Rowden	51	100	80	100	82.8
Tifcot 56	50	66	57	40	53.2
DES 422	15	27	10	9	15.2
Coker 315	30	72	38	44	46.0
McNair 220	26	39	19	30	28.5
McNair 235	19	16	45	1	20.2
Coker 208	46	16	57	59	44.5
DES 119	21	39	19	19	24.5
UArk 2402	35	28	74	38	43.8
Delcot 390	25	14	56	32	31.8
Rowden	91	82	91	56	80.0
Deltapine 61	58	55	46	70	57.2
Coker 139	32	8	68	49	39.2
GaT 81-225	26	23	18	52	29.8
Stoneville 112	19	24	35	23	25.2
McNair 235	18	20	17	23	19.5
Stoneville 506	3	53	18	23	24.2
Deltapine 50	14	34	52	67	41.8
Deltapine 20	27	30	54	29	35.0
PD 1	24	36	53	87	50.0
Rowden	88	46	51	100	71.2
Delcot 311	11	1	16	17	11.2
Stoneville 213	57	27	52	80	54.0
Deltapine 41	49	7	38	24	29.5
Coker 81-613	28	38	19	28	28.2
McNair 235	13	12	5	34	16.0