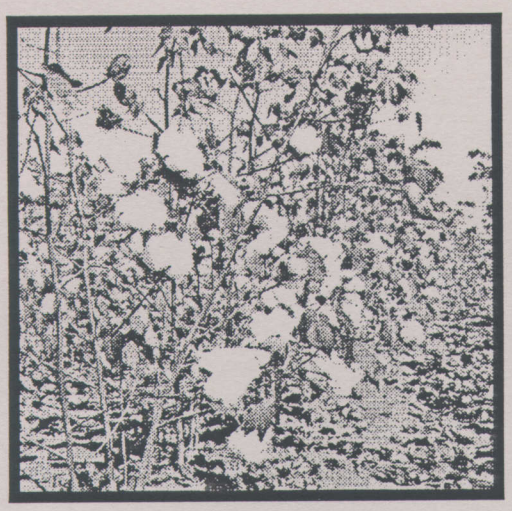
1988 Regional Cotton Fusarium Wilt Report



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1988 REGIONAL COTTON FUSARIUM WILT REPORT[1]

W.C. Johnson[2]

Cotton cultivars and elite breeding lines submitted by 26 cooperators were evaluated for fusairum wilt resistance under field conditions at the Plant Breeding Unit, Tallassee, Alabama. These entries were grown on an Independence loamy fine sand 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,...,285) and McNair 235 in row 10 and every tenth row thereafter (20, 30,...,280) throughout the test. Plots were planted May 16 and 17. Initial plant counts were made on June 7. Wilted plants were also counted and removed on that date. Later, wilted plants were counted and removed on July 22, August 10 , August 24, and September 7. The remaining live plants were also counted and recorded on September 7. Percent wilted plants were then determined and mean wilting for a given entry calculated.

For the first time in recent years, the number of entries was more than could be adequately evaluated in one field. Therefore, the test was divided with 16 entries planted in another field. Mean wilting percentages of the

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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.

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susceptible check, Rowde, in the two fields were 72.2 percent and 72.6 percent, indicating a comparable level of wilt pressure.

Average wilting of the susceptible Rowden in the main test area was 81.8, 75.3, 66.4, and 65.7 percent for the four replications; in the supplementary area, percentages were 76.7, 92.7, 68.7, and 52.7. Corresponding wilt percentages for the resistant check, McNair 235, were 25.0, 16.5, 7.7, and 6.7 (13.9 percent average) and 24.5, 15.5, 17.0, and 4.5 (15.4 percent average). 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 expresses appreciation to A. J. Kappelman, Jr., retired, for advice and technical assistance in conducting the test and preparing this report.

1988 Regional Cotton Fusarium Wilt Test,
Plant Breeding Unit, Tallassee, Alabama

Test entry designation		Percent wilt by replication 1	2	3	4	Mean
C. C. Green, CPRU, P.O. Box 2131, Florence, SC 29501						
001	PD 5227	46	15	21	44	32
002	PD 5256	50	4	1	23	22
003	PD 5286	55	44	7	39	34
004	PD 5358	47	3	5	19	19
005	ROWDEN	96	72	77	80	81
006	PD 5363	26	18	5	5	14
007	PD 5485	35	5	0	6	12
008	PD 5563	88	8	3	7	27
009	PD 4623-9	18	1	10	3	8
010	McNAIR 235	90	2	3	2	24
David Kattes, Von Roeder Seed Farm, Inc., Rt. 1, Box 80, Snyder, TX 79549						
011	VR 123	72	8	6	48	33
012	VR 86	73	46	14	45	45
013	VR 113	25	14	4	22	16
014	VR 130	48	8	3	19	20
015	ROWDEN	95	43	46	94	70
016	VR 33	68	46	22	31	42
017	VR 75	61	40	8	26	34
018	VR 1072	50	35	6	64	39
019	VR 6520	42	46	24	28	35
020	McNAIR 235	35	19	6	6	17
Lynn McDonald, Stoneville Pedigreed Seed Co., P.O. Box 167, Stoneville, MS 38776						
021	1	96	76	50	64	72
022	2	97	46	12	14	42
023	3	82	10	37	54	46
024	4	49	11	0	3	16
025	ROWDEN	86	97	20	40	61
026	5	60	28	0	2	23
027	6	92	98	10	12	53
028	7	100	94	20	6	55
029	8	69	99	5	28	50
030	McNAIR 235	36	10	1	6	13

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Plant Breeding Unit, Tallassee, Alabama

Test entry designation		Percent wilt by replication 1	2	3	4	Mean
Keith R. Jones, Delta and Pine Land Co., P.O. Box 157, Scott, MS 38772						
031	(1)	5	7	0	7	5
032	(2)	23	5	3	19	13
033	(3)	15	1	4	31	13
034	(4)	15	4	25	8	13
035	ROWDEN	74	54	71	43	61
036	(5)	9	0	11	3	6
037	(6)	66	57	6	0	32
038	(7)	82	4	4	0	23
039	(8)	79	12	2	3	24
040	McNAIR 235	32	0	29	4	16
John M. Green, 101 Sycamore Street, Leland, MS 38756						
041	JG-1	16	2	30	3	13
042	JG-2	4	5	16	7	8
043	JG-3	5	4	10	2	5
044	JG-4	5	0	7	6	5
045	ROWDEN	100	76	94	44	79
046	JG-5	5	9	5	0	5
047	JG-6	4	6	2	0	3
048	JG-7	12	37	31	0	20
049	JG-8	20	30	35	18	26
050	McNAIR 235	7	35	39	7	22
Kamal M. El-Zik, Dept. of Soil & Crop Sci., Texas A&M Univ., College Station, TX 77843-2474						
051	KME-1	31	79	9	25	36
052	KME-2	60	92	35	86	68
053	KME-3	9	44	12	37	26
054	KME-4	38	67	9	69	46
055	ROWDEN	85	100	80	97	91
056	KME-5	86	58	42	70	64
057	KME-6	51	26	30	22	32
058	KME-7	98	86	22	45	63
059	KME-8	36	31	5	3	10
060	McNAIR 235	47	42	7	8	26

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Test entry designation		Percent wilt by replication 1	2	3	4	Mean
Peggy M. Thaxton, Dept. of Soil & Crop Sci., Texas A&M Univ. College Station, TX 77843-2474						
061	PT-1	95	79	24	53	63
062	PT-2	99	92	77	79	87
063	PT-3	39	31	9	15	24
064	PT-4	18	33	11	7	17
065	ROWDEN	70	98	88	92	87
066	PT-5	81	40	15	51	47
067	PT-6	99	71	39	70	70
068	PT-7	93	41	4	30	42
069	PT-8	96	74	9	51	58
070	McNAIR 235	54	0	2	2	15
Shelby H. Baker, Univ. of Ga. C.P.E.S., P.O. Box 748, Tifton, GA 31793-0748						
071	GaT 1	65	8	0	14	22
072	GaT 2	75	0	1	2	20
073	GaT 3	59	6	0	0	16
074	GaT 4	54	7	5	32	25
075	ROWDEN	97	13	33	26	42
076	GaT 5	11	2	3	14	8
077	GaT 6	22	12	14	14	16
078	GaT 7	11	13	8	3	9
079	GaT 8	6	1	4	3	4
080	McNAIR 235	9	2	3	9	6
Richard Sheetz, Cargill Hybrid Seeds, Box 2, Aiken, TX 79221						
081	1	63	11	12	33	30
082	2	12	5	11	2	8
083	3	16	2	13	3	9
084	4	38	72	5	38	38
085	ROWDEN	89	90	48	66	73
086	5	6	11	4	2	6
087	6	15	11	4	12	11
088	7	7	6	1	0	4
089	8	9	1	2	2	4
090	McNAIR 235	10	4	5	0	5

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Test entry designation		Percent wilt by replication 1	2	3	4	Mean
Robert R. Bridge, Delta Branch Expt. Sta., P.O. Box 197, Stoneville, MS 38776						
091	RRB1	11	6	2	0	5
092	RRB2	8	10	1	6	6
093	RRB3	6	18	2	7	8
094	RRB4	1	8	0	1	3
095	ROWDEN	46	43	77	82	62
096	RRB5	8	0	3	1	3
097	RRB6	5	0	0	5	3
098	RRB7	1	1	0	3	1
099	RRB8	3	3	0	1	2
100	McNAIR 235	5	0	0	3	2
Fred Bourland, Dept. of Agron. 115 Plt. Sci. Bldg., Univ. of Arkansas, Fayettville, AK 72701						
101	FB-1	16	5	1	5	7
102	FB-2	25	35	26	7	23
103	FB-3	19	0	13	2	9
104	FB-4	17	4	3	14	10
105	ROWDEN	71	44	27	22	41
106	FB-5	10	6	9	2	7
107	FB-6	12	0	19	8	10
108	FB-7	11	11	6	3	8
109	FB-8	6	2	0	0	2
110	McNAIR 235	2	19	3	1	6
Warner Fisher, American Cyanamid, 4201 East Broadway Rd., Phoenix, AZ 85040						
111	1	12	9	4	5	8
112	2	11	24	1	3	10
113	3	0	1	1	0	1
114	4	0	20	50	45	29
115	ROWDEN	58	100	49	76	71
116	5	17	82	9	30	35
117	6	40	89	5	49	46
118	7	26	7	2	1	9
119	8	5	15	4	0	6
120	McNAIR 235	22	63	6	0	23

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Test entry designation		Percent wilt by replication 1	2	3	4	Mean
David S. Howle, Coker's Pedigreed Seed Co., Hartsville, SC 29550						
121	C-1	80	82	10	2	44
122	C-2	43	86	5	6	35
123	C-3	76	41	2	21	35
124	C-4	84	94	7	2	47
125	ROWDEN	100	100	78	83	90
126	C-5	85	65	25	31	52
127	C-6	59	39	5	1	26
128	C-7	42	64	18	11	34
129	C-8	85	55	30	28	50
130	McNAIR 235	53	8	1	2	16
B.W. White, Dept. of Agron.-Crop Science, MSU, P.O. Box 5248, Mississippi State, MS 39762						
131	BW-1	61	24	2	22	27
132	BW-2	88	7	23	24	36
133	BW-3	100	94	86	29	77
134	BW-4	98	5	5	13	30
135	ROWDEN	96	36	71	68	68
136	BW-5	34	15	1	1	13
137	BW-6	12	2	2	2	5
138	BW-7	40	29	5	8	21
139	BW-8	9	3	0	2	4
140	McNAIR 235	11	4	5	10	8
Mason Hawkins, Ranger Seed Co., Box 1288, Tahoka, TX 79373						
141	RSC-1	0	11	2	5	5
142	RSC-2	38	14	9	22	21
143	RSC-3	2	2	0	27	8
144	RSC-4	38	11	18	25	23
145	ROWDEN	95	46	54	81	69
146	RSC-5	29	20	6	7	16
147	RSC-6	24	53	37	62	44
148	RSC-7	20	36	37	33	32
149	RSC-8	64	36	57	62	55
150	McNAIR 235	0	12	23	4	10

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Test entry designation		Percent wilt by replication 1	2	3	4	Mean
Laval M. Verhalen, Dept. of Agron., Oklahoma State University, Stillwater, OK 74078-0507						
151	OKLA-1	3	4	3	3	3
152	OKLA-2	0	1	5	0	2
153	OKLA-3	2	0	1	0	1
154	OKLA-4	0	1	3	4	2
155	ROWDEN	84	88	92	50	79
156	OKLA-5	0	0	19	10	7
157	OKLA-6	0	13	1	4	5
158	OKLA-7	1	0	0	0	0
159	OKLA-8	0	2	4	0	2
160	McNAIR 235	16	3	0	11	8
W.C. Johnson, Dept. of Agronomy and Soils, Auburn University, AL 36849						
161	Coker 84-828	13	2	11	39	16
162	Terra C 40	5	2	8	56	18
163	HS 46	10	0	20	58	22
164	McNair 220	4	7	0	0	3
165	ROWDEN	72	76	69	43	65
166	BR 110	14	34	4	0	13
167	Coker 315	14	4	1	5	6
168	Deltapine 41	10	0	5	0	4
169	Stoneville 112	12	20	3	0	9
170	McNAIR 235	2	8	5	2	4
171	Deltapine 90	8	14	2	3	7
172	Stoneville 453	41	79	66	18	51
173	Deltapine 20	1	17	4	9	8
174	Coker 208	18	67	10	50	36
175	ROWDEN	94	95	15	25	57
176	Terra C 30	21	34	1	9	17
177	KC 380	36	94	21	24	44
178	Deltapine 50	11	72	13	1	24
179	Delcot 390	18	56	3	21	25
180	McNAIR 235	19	62	3	7	23
181	Coker 139	12	78	22	6	30
182	GAT 225	28	39	29	5	25
183	Tifcot 56	33	78	27	34	43
184	Delcot 344	5	36	28	1	18

Cont'd.

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Plant Breeding Unit, Tallassee, Alabama

Test entry designation		Percent wilt by replication 1	2	3	4	Mean
W.C. Johnson, Dept. of Agronomy and Soils, Auburn University, AL 36849 Cont'd.						
185	ROWDEN	100	100	83	23	77
186	PD 3	18	31	2	33	21
187	Arkot 518	53	46	4	0	26
188	Coker 118	54	88	6	9	39
189	Stoneville 825	95	100	42	14	63
190	McNAIR 235	57	43	2	6	27
191	DES 119	51	41	1	18	28
192	Stoneville 506	58	57	3	3	30
193	Deltapine 50-469	28	16	0	31	19
194	Coker 130	48	28	2	3	20
195	ROWDEN	96	100	62	83	85
196	Delcot311	69	0	1	2	18
Curtis Williams, Jacob Hartz Seed Co., Inc., P.O. Box 946, Stuttgart, AR 72160-0946						
197	Hartz Exp 1	100	100	99	97	99
198	Hartz Exp 2	12	12	16	4	11
Gene Douglas, 1441 East John Cove, Greenville, MS 38703						
199	HAS 1801	61	3	31	17	28
200	McNAIR 235	22	5	6	5	10
201	HAS 1802	47	44	3	25	30
202	HAS 1803	93	97	49	47	72
203	HAS 1804	0	11	4	14	7
204	HAS 1805	60	49	87	93	72
205	ROWDEN	98	67	80	86	83
206	HAS 1806	83	33	57	64	59
207	HAS 1807	0	1	1	4	2
208	HAS 1808	0	0	0	51	13
Jack E. Jones, Dept. of Agronomy, LSU, Baton Rouge, LA 70803-2110						
209	JJ-1	6	1	2	2	3
210	McNAIR 235	13	0	6	16	9
211	JJ-2	1	0	0	1	1
212	JJ-3	1	1	0	0	1
213	JJ-4	0	0	2	0	1
213	JJ-5	1	1	0	0	1
215	ROWDEN	86	79	52	72	72
216	JJ-6	2	1	2	0	1
217	JJ-7	3	0	0	0	1
218	JJ-8	0	0	2	0	1

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W. P. Sappenfield, University of Mo.-Columbia, P.O. Box 160, Portageville, MO 63873						
219	MO-1	10	0	1	0	3
220	McNAIR 235	11	2	3	6	6
221	MO-2	1	1	0	4	2
222	MO-6	4	1	3	1	2
223	MO-7	1	1	0	0	1
224	MO-10	1	1	1	1	1
225	ROWDEN	48	54	86	83	68
226	MO-11	0	0	1	4	1
227	MO-13	0	1	0	1	1
228	MO-17	4	1	2	1	2
229	MO-19	2	1	0	1	1
230	McNAIR 235	11	10	14	1	9
231	MO-20	3	1	4	12	5
232	MO-21	3	0	1	0	1
233	MO-22	0	0	0	0	0
234	MO-24	0	0	1	2	1
235	ROWDEN	48	90	97	29	66
236	MO-25	1	0	0	3	1
237	MO-26	0	1	3	2	2
238	MO-27	0	1	1	4	2
239	MO-28	2	1	0	1	1
240	McNAIR 235	3	14	2	15	9
241	MO-29	1	10	0	3	4
242	MO-31	2	9	0	2	3
243	MO-32	2	2	1	2	2
244	MO-33	0	3	1	0	1
245	ROWDEN	47	100	95	100	86
246	MO-36	1	2	2	4	2
R.L. Shepherd, P.O. Box 5367, Mississippi State, MS 39762						
247	RLS-1	5	2	4	2	3
248	RLS-2	0	11	0	0	3
249	RLS-3	0	11	3	5	5
250	McNAIR 235	39	35	9	29	28
251	RLS-4	3	10	3	3	5
252	RLS-5	3	0	6	0	2
253	RLS-6	7	13	6	14	10
254	RLS-7	4	3	0	6	3
255	ROWDEN	98	98	82	85	91
256	RLS-8	9	0	0	45	14

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Test entry designation		Percent wilt by replication 1	2	3	4	Mean
Rex Dunn, Dunn Seed Co., Rt. 4 Box 437, Seminole, TX 79360						
257	D-1851	21	40	3	6	18
258	D-325	73	0	9	8	23
259	HS-120	57	6	1	7	18
260	McNAIR 235	45	24	17	11	24
261	HS 1047	39	29	12	0	20
262	HS 1325	35	2	8	0	11
Ron Thorp, Stoneville Seed Co., 1180 Avenida Ellenna, Cassa Grande, AZ 85222						
263	811	26	0	29	2	14
Curtis Williams Cont'd. (see above)						
264	Hartz-3	91	100	99	77	92
Joel F. Mahill, GroAgri Seed Co., P.O. Box 1656, Lubbock, TX 79408						
265	ROWDEN	79	94	49	43	66
266	EXP 1095	45	57	31	4	34
267	EXP 1093	36	2	2	0	10
268	EXP 1054	63	45	21	0	32
269	EXP 1059	29	11	34	0	19
270	McNAIR 235	46	25	23	2	24
271	EXP 1091	36	22	7	2	17
Ron Thorp Cont'd. (see above)						
272	812	14	0	5	1	5
273	813	26	8	0	4	10
274	814	5	1	1	--	2
275	ROWDEN	76	84	73	23	64
C. Wayne Smith, Dept. of Crop Sci., Texas A&M, College Station, TX 77843-2474						
276	CIL-1	2	1	5	6	4
277	CIL-2	0	1	29	30	15
278	CIL-3	3	2	4	12	5
279	CIL-4	2	4	19	30	14
280	McNAIR 235	3	6	11	7	7
281	CIL-5	13	40	47	59	40
282	CIL-6	1	8	32	26	17
283	CIL-7	3	7	25	7	11
284	CIL-8	15	33	67	49	41
285	ROWDEN	55	100	84	91	83