

1994

Regional

Cotton

Fusarium Wilt

Report



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Lowell T. Frobish, Director

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1994 REGIONAL COTTON FUSARIUM WILT REPORT¹

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Cotton cultivars and elite breeding lines submitted by 24 cooperators were evaluated for fusarium wilt resistance under field conditions at the E. V. Smith Research Center, 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 incognita).

Plots were 36-inch-wide rows, 30 feet in length, separated by 5-foot alleys. Four replications of the test entries and checks, arranged in a block design, were evaluated. Both susceptible (Rowden) and resistant (M-315) cultivars were included as checks. Auburn 56 was used as the resistant check in the Regional Fusarium Wilt Test for many years. However, M-315 is now being used as the resistant check, because it is the most consistently resistant cultivar available. Rowden was planted in row 5 and every tenth row thereafter (15, 25, ..., 265) and M-315 in row 10 and every tenth row thereafter (20, 30, ..., 270) throughout the test. Plots were planted June 2. Initial plant counts were made on June 24. Wilted plants were counted and removed on July 19, August 1, August 12, August 29, and September 13. The remaining live plants were also counted and recorded

¹This 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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on September 19. Percent wilted plants were then determined and mean wilting for a given entry calculated.

Average wilting of the susceptible Rowden was 84, 66, 60, and 86 percent for the four replications (74 percent average). Corresponding wilt percentages for the resistant check, M-315, were 13, 8, 6, and 8 (9 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 process 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.

A soil analysis for nematodes revealed that southern root-knot (Meloidogyne incognita) and lance (Hoplolaimus galeatus) were two predominant nematode species in the test plots in 1994. High populations of both species were found throughout the test area. Other nematode genera found were stubby root (Trichodorus sp.) and stunt (Tylenchorhynchus sp.). Root-knot nematodes, however, appear to be causing the major damage to cotton in the Fusarium Wilt Test as indicated by the high galling indices found on the roots of all cotton lines.

Entries submitted by Kathryn Glass are commonly grown cultivars or advanced commercial materials and 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

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

1994 Fusarium Wilt Test
E. V. Smith Research Center, Tallassee, Alabama

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
1 Bill Fagala, Terra International Inc., P.O. Box 171376, Memphis, TN 38187						
001	TR 3020.....	35	93	85	100	78
002	TR 3030.....	11	85	21	30	37
003	TR 3040.....	22	64	31	9	32
004	TR 3050.....	63	90	56	83	73
005	ROWDEN.....	83	99	96	88	92
006	TR 3060.....	10	74	45	66	49
007	TR 3070.....	20	77	16	21	34
008	TR 3080.....	80	93	54	88	79
009	TR 3090.....	61	77	28	50	54
010	M-315.....	3	12	6	4	6
2 W.P. Sappenfield, 115 Mango Cove, Leesburg, FL 34748						
011	AZ-1.....	14	50	44	15	31
012	AZ-2.....	52	43	54	38	47
013	AZ-3.....	5	19	6	28	15
014	AZ-4.....	7	11	12	12	11
015	ROWDEN.....	59	83	54	96	73
016	AZ-5.....	5	33	8	30	19
017	AZ-6.....	52	35	10	64	40
018	AZ-7.....	50	35	23	23	33
019	AZ-8.....	48	24	15	12	25
020	M-315.....	6	10	3	13	8
3 Joshua J. Stanton, Jr., Stoneville Pedigreed Seed Co., Inc., P.O. Box 338, Hartsville, SC 29550						
021	1.....	54	52	9	79	49
022	2.....	73	31	26	48	45
023	3.....	43	12	12	45	28
024	4.....	89	20	49	78	59
025	ROWDEN.....	98	44	77	97	79
026	5.....	74	41	9	59	46
027	6.....	46	35	8	6	24
028	7.....	47	60	15	58	45
029	8.....	63	73	15	64	54
030	M-315.....	13	15	3	27	15

1994 Fusarium Wilt Test
E. V. Smith Research Center, Tallassee, Alabama

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
4 C. Wayne Smith, Dept. of Soil & Crop Sci., Texas A&M Univ., College Station, TX 77843-2474						
031	CWS-1	13	10	7	22	13
032	CWS-2	50	34	4	23	28
033	CWS-3	98	89	16	78	70
034	CWS-4	86	77	3	32	50
035	ROWDEN	94	94	22	94	76
036	CWS-5	100	19	17	88	56
037	CWS-6	68	17	26	59	43
038	CWS-7	98	27	31	81	59
039	CWS-8	97	10	6	40	38
040	M-315	23	3	4	8	10
5 O. Lloyd May, CPRU, P.O. Box 3039, Florence, SC 29502-3039						
041	LM-1	89	36	4	62	48
042	LM-2	76	57	6	28	42
043	LM-3	22	49	15	28	29
044	LM-4	40	28	5	59	33
045	ROWDEN	86	84	37	98	76
046	LM-5	30	25	15	53	31
047	LM-6	42	16	8	51	29
048	LM-7	24	32	17	57	33
049	LM-8	42	43	12	32	32
050	M-315	19	8	5	8	10
6 Kamal M. El-Zik, Dept. of Soil & Crop Sci., Texas A&M Univ., College Station, TX 77843-2474						
051	KME-1	81	74	19	20	49
052	KME-2	92	77	11	45	56
053	KME-3	96	92	6	19	53
054	KME-4	83	98	37	45	66
055	ROWDEN	94	100	88	99	95
056	KME-5	77	99	53	54	71
057	KME-6	95	97	39	59	73
058	KME-7	54	71	19	17	40
059	KME-8	73	88	28	55	61
060	M 315	4	15	3	27	12

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Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
7 R.R. Bridge, Suregrow Research, P.O. Box 312, Leland, MS 38756						
061	SG-125	14	95	17	44	43
062	SG-404	34	43	5	10	23
063	SG-501	56	100	26	26	52
064	SG-2321	42	84	6	4	34
065	ROWDEN	97	100	64	82	86
066	SG-1923	46	86	4	24	40
067	SG-92343	77	87	6	20	48
068	SG-223	84	83	1	6	44
069	DES 119	36	58	1	15	28
070	M-315	12	17	5	4	10
8 Freddie M. Miller, Terra International, Inc., P.O. Box 171376, Memphis, TN 38187						
071	TR 501	45	4	4	9	16
072	TR 502	32	11	4	14	15
073	TR 503	18	10	3	18	12
074	TR 504	18	1	0	14	8
075	ROWDEN	93	60	22	65	60
076	TR 505	26	14	6	43	22
077	TR 506	25	18	1	45	22
078	TR 507	57	55	19	45	44
079	TR 508	21	25	6	8	15
080	M-315	20	18	2	4	11
9 James L. Starr, Dept. of Plant Pathology and Microbiology, Texas A&M University, College Station, TX 77843-2132						
081	1	31	8	5	12	14
082	2	41	13	0	2	14
083	3	68	13	1	5	22
084	4	34	3	2	10	12
085	ROWDEN	99	44	39	76	65
086	5	46	19	3	4	18
087	6	37	21	3	4	16
088	7	55	56	2	5	30
089	8	31	10	1	5	12
090	M-315	20	9	4	2	9

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
10 Fred Bourland, 115 Plant Science Bldg., Univ. of Arkansas, Fayetteville, AR 72701					
091 Ark-1	73	23	5	9	28
092 Ark-2	65	27	1	20	28
093 Ark-3	83	79	0	14	44
094 Ark-4	69	49	8	8	34
095 ROWDEN	99	97	20	72	72
096 Ark-5	95	13	18	59	46
097 Ark-6	98	26	2	14	35
098 Ark-7	99	2	4	10	29
099 Ark-8	53	10	0	4	17
100 M-315	8	2	5	4	5
11 Cindy Green, Delta and Pine Land Co., P.O. Box 1529, Hartsville, SC 29550					
101 1	59	19	5	35	30
102 2	66	19	6	27	30
103 3	91	62	9	78	60
104 4	38	52	2	73	41
105 ROWDEN	93	47	14	95	62
106 5	39	1	0	23	16
107 6	81	20	15	47	41
108 7	32	6	5	11	14
109 8	95	65	8	48	54
110 M-315	16	5	2	5	7
12 Joseph Vasek, Chembred Inc., 10201 So. 51st Street, Phoenix, AZ 85044					
111 CBX466	21	58	4	2	21
112 CBX477	34	80	2	22	35
113 CBX525	51	79	10	19	40
114 CBX550	71	82	5	36	49
115 ROWDEN	80	100	34	93	77
116 CBX620	51	97	7	15	43
117 471342	28	59	4	19	28
118 341342	22	73	6	4	26
119 CB830	6	38	4	14	16
120 M-315	1	9	5	5	5

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
13 Shelby H. Baker, Univ. of Georgia, Coastal Plain Station, P.O. Box 748, Tifton, GA 31793					
121 GA-1	9	75	10	73	42
122 GA-2	38	94	2	27	40
123 GA-3	24	100	0	49	43
124 GA-4	39	94	0	21	39
125 ROWDEN	93	98	53	95	85
126 GA-5	48	85	9	51	48
127 GA-6	63	91	6	80	60
128 GA-7	34	30	14	13	23
129 GA-8	14	20	0	2	9
130 M-315	2	6	4	5	4
14 Keith R. Jones, Delta & Pine Land Co., P.O. Box 157, Scott, MS 38772					
131 DPL-1	26	16	2	8	13
132 DPL-2	50	26	4	12	23
133 DPL-3	23	12	0	41	19
134 DPL-4	49	5	0	10	16
135 ROWDEN	87	60	25	89	65
136 DPL-5	9	4	2	40	11
137 DPL-6	20	26	2	69	29
138 DPL-7	26	5	2	13	12
139 DPL-8	38	18	2	29	22
140 M-315	3	15	3	4	6
15 Peggy Thaxton, Dept. of Soil & Crop Sci., Texas A&M Univ., College Station, TX 77843-2474					
141 PMT-1	61	19	9	62	38
142 PMT-2	65	12	4	66	37
143 PMT-3	76	7	5	42	33
144 PMT-4	89	4	2	16	28
145 ROWDEN	95	40	54	95	57
146 PMT-5	95	80	7	31	53
147 PMT-6	42	12	13	5	18
148 PMT-7	90	58	5	21	44
149 PMT-8	74	6	0	10	23
150 M-315	39	5	3	9	14

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
16 Doug Wessel, Delta and Pine Land Co., 1305 N VIP Blvd., Casa Grande, AZ 85222					
151 LB-1.....	52	36	68	71	57
152 LB-2.....	73	7	3	20	26
153 LB-3.....	83	26	4	9	31
154 LB-4.....	37	3	1	4	11
155 ROWDEN.....	93	70	33	78	46
156 LB-5.....	83	7	40	77	52
157 LB-6.....	99	8	9	55	43
158 LB-7.....	44	4	3	12	16
159 LB-8.....	74	12	6	45	34
160 M-315.....	12	3	7	27	12
17 Richard Sheetz, Cargill Hybrid Seeds, Box 2, Aiken, TX 79221					
161 1.....	15	3	2	18	10
162 2.....	19	1	1	16	9
163 3.....	12	1	3	7	6
164 4.....	25	28	13	65	33
165 ROWDEN.....	57	34	25	83	50
166 5.....	64	13	12	71	40
167 6.....	30	9	1	15	14
168 7.....	11	5	1	18	9
169 8.....	24	13	7	8	13
170 M-315.....	9	1	6	4	5
18 John Green, Seed Source Inc., 106 East 4th Street, Leland, MS 38756					
171 SSI-1.....	16	34	18	38	27
172 SSI-2.....	13	40	4	23	20
173 SSI-3.....	23	45	5	32	26
174 SSI-4.....	41	68	38	82	57
175 ROWDEN.....	91	81	91	98	90
176 SSI-5.....	58	39	12	63	43
177 SSI-6.....	9	42	5	44	25
178 SSI-7.....	15	48	18	43	31
179 SSI-8.....	20	70	11	14	29
180 M-315.....	5	7	5	9	7

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
19 Bobby Phipps, Mycogen Plant Sciences, 13974 West Van Buren, Goodyear, AZ 85338					
181 Myco 1185	4	36	43	4	22
182 Myco 2006	26	53	62	4	36
183 Myco 2009	10	7	68	15	25
184 Myco 3075	3	1	8	3	4
185 ROWDEN	47	55	99	94	74
186 Myco 3077	5	10	29	72	29
187 Myco 3076	11	27	27	41	27
188 Myco 3090	10	21	12	16	15
189 Myco 4010	4	39	38	52	33
190 M-315	3	6	3	1	3
20 Jim Mitchell, Jacob Hartz Seed Co., Inc., P.O. Box 946, Stuttgart, AR 72160					
191 1	6	17	34	13	18
192 2	38	49	34	80	50
193 3	9	4	3	14	8
194 4	43	22	74	89	57
195 ROWDEN	47	33	89	94	66
196 5	10	4	17	27	15
197 6	13	3	7	53	19
198 7	24	3	9	26	16
199 8	87	32	61	98	70
200 M-315	2	2	10	18	8
21 Daryl Bowman, Dept. of Crop Science, North Carolina State Univ., Box 8604, Raleigh, NC 27695-8604					
201 NC 92-42	91	27	21	98	59
202 NC 92-46	56	10	24	38	32
203 NC 92-76	58	8	34	68	42
204 NC 92-84	100	15	33	91	60
205 ROWDEN	97	48	57	98	75

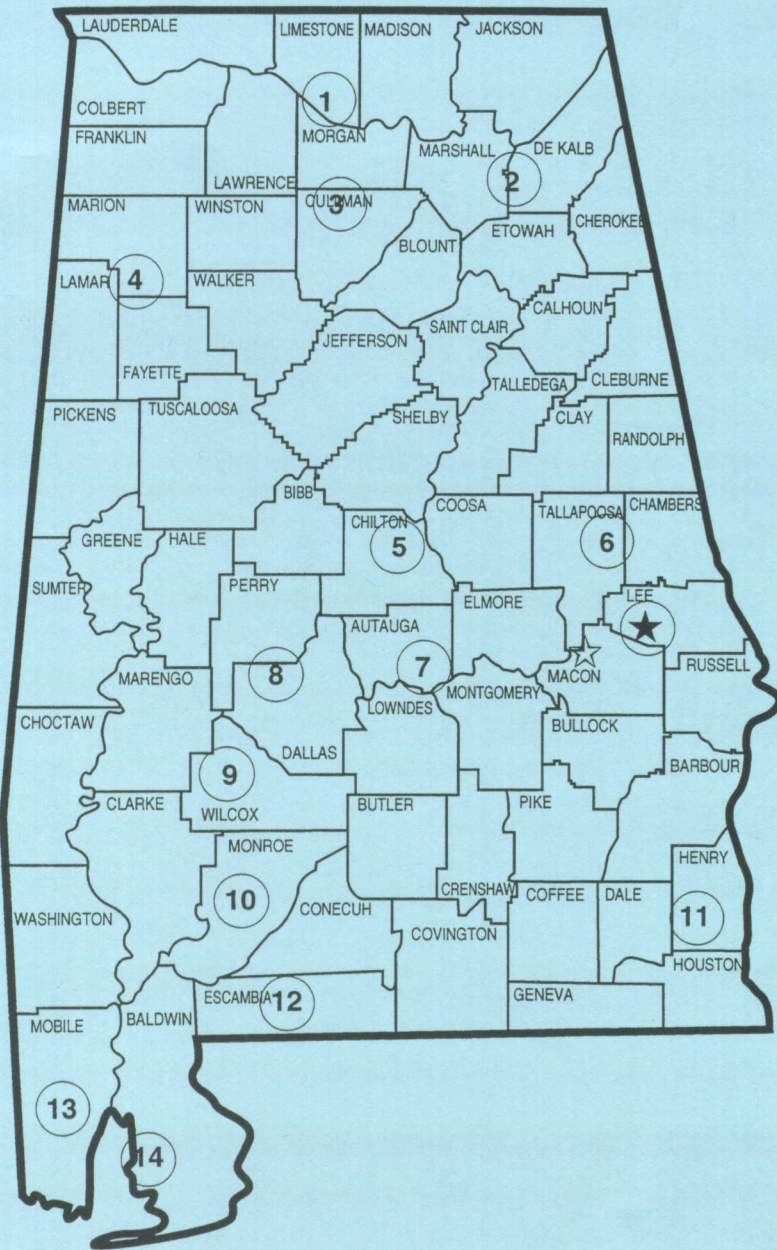
1994 Fusarium Wilt Test
E. V. Smith Research Center, Tallassee, Alabama

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
22	A.L. Germany, Stoneville Pedigreed Seed Co. Inc., Box 167, Stoneville, MS 38776					
206	SPSCO-1	92	16	11	67	47
207	SPSCO-2	56	19	8	11	24
208	SPSCO-3	86	25	6	20	34
209	SPSCO-4	91	12	8	24	34
210	M-315	30	4	2	5	10
211	SPSCO-5	84	13	51	16	41
212	SPSCO-6	71	19	19	17	32
213	SPSCO-7	73	33	16	7	32
214	SPSCO-8	82	52	28	21	46
215	ROWDEN	97	93	81	85	89
23	Dr. Joel F. Mahill, Germain's Cotton Research, P.O. Box 80247, Bakersfield, CA 93380					
216	GC-94-1	92	10	53	80	59
217	GC-94-2	82	7	61	15	41
218	GC-94-3	60	15	32	40	37
219	GC-94-4	84	16	58	72	58
220	M-315	11	10	13	6	10
221	GC-94-5	46	14	4	26	23
222	GC-94-6	59	17	13	27	29
223	GC-94-7	11	12	13	6	11
24	Kathryn M. Glass, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849-5412					
224	Stoneville 453	52	35	40	66	48
225	ROWDEN	49	42	61	87	60
226	Hy Performer HS 46	20	32	65	25	36
227	Hy Performer HS 44	14	18	41	50	31
228	Hy Performer HS 23	21	2	6	16	11
229	Hy Performer HS 39	42	6	56	13	29
230	M-315	4	2	17	3	7
231	Hartz H 1215	52	25	95	57	57
232	Hartz H 1220	60	22	68	69	55
233	Hartz H 1244	44	39	68	26	44
234	Hartz H 1330	24	15	56	24	30
235	ROWDEN	59	41	95	82	69

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	1	2	3	4	Mean	
Con't. Kathryn M. Glass, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849-5412						
236	Hartz H 1380.....	6	7	58	7	20
237	Mycogen 3081	24	11	24	1	15
238	Suregrow 1001	39	12	67	3	30
239	GC 210	61	64	78	4	52
240	M-315	3	10	9	0	6
241	GC 9033	35	11	75	4	31
242	Chembred 333.....	68	3	65	6	36
243	Chembred 407.....	89	12	68	3	43
244	Chembred 1135.....	63	2	30	0	24
245	ROWDEN	92	26	96	55	67
246	Chembred 1233.....	18	7	24	4	13
247	Stoneville 132.....	13	4	50	4	18
248	Stoneville LA 887.....	8	12	13	2	9
249	Stoneville GA King	34	12	18	8	18
250	M-315	2	1	23	2	7
251	Stoneville 474.....	40	15	78	37	43
252	Stoneville 94332.....	30	15	22	9	19
253	Terra C 40	29	21	38	10	25
254	Terra TR 207.....	16	18	20	3	14
255	ROWDEN	82	72	100	81	84
256	Terra TR 292.....	12	22	20	9	16
257	Terra TR 366.....	20	35	53	14	31
258	Terra TR 302.....	21	17	25	3	17
259	Deltapine 20	35	15	20	5	19
260	M-315	10	6	1	4	5
261	Deltapine 50	65	3	23	11	26
262	Deltapine 51	49	10	27	4	23
263	Deltapine DES 119.....	27	12	24	5	17
264	Deltapine DP 5409	92	8	70	2	43
265	ROWDEN	98	35	92	59	71
266	Deltapine DP 5415	71	22	35	2	33
267	Deltapine DP 5690	82	24	7	0	28
268	Deltapine Acala 90	87	50	18	7	41
269	Stoneville KC 311	77	20	28	4	32
270	M-315	81	6	22	2	28

Alabama's Agricultural Experiment Station System AUBURN UNIVERSITY



★ Main Agricultural Experiment Station,
Auburn.

☆ E. V. Smith Research Center,
Shorter.

1. Tennessee Valley Substation,
Belle Mina.
2. Sand Mountain Substation,
Crossville.
3. North Alabama Horticulture
Substation, Cullman.
4. Upper Coastal Plain Substation,
Winfield.
5. Chilton Area Horticulture Substation,
Clanton.
6. Piedmont Substation,
Camp Hill.
7. Prattville Experiment Field,
Prattville.
8. Black Belt Substation,
Marion Junction.
9. Lower Coastal Plain Substation,
Camden.
10. Monroeville Experiment Field,
Monroeville.
11. Wiregrass Substation,
Headland.
12. Brewton Experiment Field,
Brewton.
13. Ornamental Horticulture Substation,
Spring Hill.
14. Gulf Coast Substation,
Fairhope.