

REGIONAL

COTTON

FUSARIUM WILT

REPORT

1995

AGRONOMY AND SOILS DEPARTMENTAL SERIES NO. 189  
SEPTEMBER 1995  
ALABAMA AGRICULTURAL EXPERIMENT STATION  
LOWELL T. FROBISH, DIRECTOR  
AUBURN UNIVERSITY, ALABAMA



# 1995 REGIONAL COTTON FUSARIUM WILT REPORT<sup>1</sup>

*K. M. Glass and W. S. Gazaway<sup>2</sup>*

Cotton cultivars and elite breeding lines submitted by 20 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 40-inch-wide rows, 20 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 May 22. Initial plant counts were made on June 16. Wilted plants were counted and removed on July 6, July 27, and August 15. The remaining live plants were counted and recorded on August 22.

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<sup>1</sup>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.

<sup>2</sup>Research Assistant of Agronomy and Soils and Professor and Extension Plant Pathologist/Nematologist.

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

Average wilting of the susceptible Rowden was 89, 83, 93, and 93 percent for the four replications (90 percent average). Corresponding wilt percentages for the resistant check, M-315, were 4, 6, 8, and 9 percent (7 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*) are two predominant nematode species in the test plots. High populations of both species are found throughout the test area. Other nematode genera present are 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.*

**1995 FUSARIUM WILT TEST**  
**E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA**

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
<b>1 Richard Sheetz, Paymaster Cottonseed, P.O. Box 8, Aiken, TX 79221</b>					
001 1	43	51	41	71	51
002 2	59	36	19	69	46
003 3	87	49	53	86	69
004 4	8	5	29	37	20
005 <b>ROWDEN</b>	85	74	95	64	79
006 5	2	4	10	14	8
007 6	4	6	0	29	10
008 7	2	3	16	22	11
009 8	9	5	16	10	10
010 <b>M-315</b>	0	0	3	2	1
<b>2 Laval M. Verhalen, Dept. of Agronomy, Oklahoma State University, Stillwater, OK 74078</b>					
011 OKLA-1	16	9	10	0	9
012 OKLA-2	0	10	3	8	5
013 OKLA-3	36	8	32	27	25
014 OKLA-4	23	14	35	52	31
015 <b>ROWDEN</b>	97	85	95	98	94
016 OKLA-5	3	7	14	21	11
017 OKLA-6	2	13	12	75	25
018 OKLA-7	10	4	13	59	21
019 OKLA-8	0	0	0	10	2
020 <b>M-315</b>	0	8	12	3	6
<b>3 Fred Bourland, 115 Plant Science Bldg., Univ. of Arkansas, Fayetteville, AR 72701</b>					
021 ARK-1	26	17	23	15	20
022 ARK-2	8	11	14	23	14
023 ARK-3	34	19	65	12	32
024 ARK-4	46	46	74	16	46
025 <b>ROWDEN</b>	96	83	96	92	92
026 ARK-5	40	78	26	80	56
027 ARK-6	42	24	3	21	22
028 ARK-7	96	100	95	85	94
029 ARK-8	61	92	31	50	59
030 <b>M-315</b>	5	6	2	24	9

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**E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA**

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
<b>4 O. Lloyd May, CPRU, P.O. Box 3039, Florence, SC 29502-3039</b>					
031 1 .....	53	95	60	73	70
032 2 .....	78	94	38	33	61
033 3 .....	56	95	62	31	61
034 4 .....	43	51	22	26	35
035 <b>ROWDEN</b> .....	51	100	88	94	83
036 5 .....	10	63	19	19	27
037 6 .....	25	65	98	27	54
038 7 .....	19	23	70	13	31
039 8 .....	15	58	74	58	51
040 <b>M-315</b> .....	4	5	13	4	6
<b>5 C. Wayne Smith, Dept. of Soil &amp; Crop Sci., Texas A&amp;M Univ., College Station, TX 77843-2474</b>					
041 CWS-1 .....	4	12	6	18	10
042 CWS-2 .....	11	14	6	65	24
043 CWS-3 .....	14	2	27	82	31
044 CWS-4 .....	19	5	9	59	23
045 <b>ROWDEN</b> .....	91	82	92	93	89
046 CWS-5 .....	100	91	94	100	96
047 CWS-6 .....	6	6	6	23	10
048 CWS-7 .....	94	71	96	91	88
049 CWS-8 .....	51	50	33	34	42
050 <b>M-315</b> .....	3	3	2	12	5
<b>6 Peggy Thaxton, Dept. of Soil &amp; Crop Sci., Texas A&amp;M Univ., College Station, TX 77843-2474</b>					
051 MAR-1 .....	60	33	25	47	41
052 MAR-2 .....	35	48	72	37	48
053 MAR-3 .....	24	55	70	65	54
054 MAR-4 .....	65	73	48	79	66
055 <b>ROWDEN</b> .....	87	77	98	84	86
056 MAR-5 .....	64	52	80	56	63
057 MAR-6 .....	46	9	58	26	35
058 MAR-7 .....	58	17	13	55	36
059 MAR-8 .....	97	46	73	97	78
060 <b>M 315</b> .....	7	9	6	10	8

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**E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA**

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
7 Michael Swindle, Jacob Hartz Seed Co., Inc., P.O. Box 946, Stuttgart, AR 72160					
061 1 .....	83	15	6	50	39
062 2 .....	90	4	11	62	42
063 3 .....	65	51	43	94	63
064 4 .....	53	25	100	85	66
065 <b>ROWDEN</b> .....	100	67	99	98	91
066 5 .....	95	6	100	88	72
067 6 .....	24	11	16	86	34
068 7 .....	8	9	63	32	28
069 8 .....	49	27	79	13	42
070 <b>M-315</b> .....	0	10	2	4	4
8 A.L. Germany, Stoneville Pedigreed Seed Co. Inc., Box 167, Stoneville, MS 38776					
071 ALG-1 .....	28	96	27	63	53
072 ALG-2 .....	3	36	1	5	11
073 ALG-3 .....	79	67	100	67	78
074 ALG-4 .....	81	91	100	84	89
075 <b>ROWDEN</b> .....	90	97	98	98	96
076 ALG-5 .....	83	91	80	71	81
077 ALG-6 .....	39	4	24	33	25
078 ALG-7 .....	26	21	43	100	47
079 ALG-8 .....	6	4	3	23	9
080 <b>M-315</b> .....	2	6	15	21	11
9 Donald M. Panter, Stoneville Pedigreed Seed Co., Inc., P.O. Box 167, Stoneville, MS 38776					
081 DMP-1 .....	13	8	39	22	20
082 DMP-2 .....	19	54	39	64	44
083 DMP-3 .....	17	39	90	46	48
084 DMP-4 .....	58	31	93	14	49
085 <b>ROWDEN</b> .....	91	90	97	91	92
086 DMP-5 .....	39	97	33	67	59
087 DMP-6 .....	66	10	39	25	35
088 DMP-7 .....	55	100	50	23	57
089 DMP-8 .....	71	86	18	41	54
090 <b>M-315</b> .....	5	11	4	20	10

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
10 Dr. Joel F. Mahill, Germain's Cotton Research, P.O. Box 80247, Bakersfield, CA 93380					
091 GC95-1 .....	68	100	89	94	88
092 GC95-2 .....	62	100	14	56	58
093 GC95-3 .....	84	93	38	21	59
094 GC95-4 .....	47	70	35	38	47
095 <b>ROWDEN</b> .....	96	100	93	94	96
096 GC95-5 .....	31	65	47	58	50
097 GC95-6 .....	52	51	100	30	58
098 GC95-7 .....	13	9	68	12	25
099 GC95-8 .....	6	18	10	38	18
100 <b>M-315</b> .....	2	0	5	6	3
11 R.R. Bridge, Suregrow Research, P.O. Box 312, Leland, MS 38756					
101 SG-1 .....	6	13	93	19	33
102 SG-2 .....	4	33	6	62	26
103 SG-3 .....	46	96	55	100	74
104 SG-4 .....	33	6	12	31	21
105 <b>ROWDEN</b> .....	97	96	88	88	92
106 SG-5 .....	9	12	37	24	20
107 SG-6 .....	33	60	86	38	54
108 SG-7 .....	72	67	100	49	72
109 SG-8 .....	7	39	41	13	25
110 <b>M-315</b> .....	18	2	2	20	10
12 Shelby H. Baker, Univ. of Georgia, Coastal Plain Station, P.O. Box 748, Tifton, GA 31793					
111 GA-1 .....	16	18	86	4	31
112 GA-2 .....	34	19	89	10	38
113 GA-3 .....	43	30	89	71	58
114 GA-4 .....	65	21	63	55	51
115 <b>ROWDEN</b> .....	100	41	100	91	83
116 GA-5 .....	100	35	100	71	76
117 GA-6 .....	39	33	98	82	63
118 GA-7 .....	88	21	60	89	64
119 GA-8 .....	97	13	65	100	69
120 <b>M-315</b> .....	3	8	7	23	10



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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
13 Bill Fagala, Terra International Inc., P.O. Box 171376, Memphis, TN 38187					
121 1 .....	99	23	19	55	49
122 2 .....	90	6	4	84	46
123 3 .....	100	19	8	0	32
124 4 .....	100	72	90	93	89
125 <b>ROWDEN</b> .....	100	93	98	100	98
126 5 .....	72	9	67	21	42
127 6 .....	28	19	23	39	27
128 7 .....	14	10	24	22	17
129 8 .....	15	6	64	11	24
130 <b>M-315</b> .....	4	4	3	0	3
14 Freddie M. Miller, Terra International, Inc., P.O. Box 171376, Memphis, TN 38187					
131 1 .....	19	17	25	47	27
132 2 .....	15	74	74	40	51
133 3 .....	31	19	92	15	39
134 4 .....	38	19	26	18	25
135 <b>ROWDEN</b> .....	87	93	92	99	93
136 5 .....	43	48	12	25	32
137 6 .....	85	28	37	77	56
138 7 .....	20	81	16	75	48
139 8 .....	13	50	17	53	33
140 <b>M-315</b> .....	0	5	14	3	5
15 Cindy Green, Delta and Pine Land Co., P.O. Box 1529, Hartsville, SC 29550					
141 1 .....	33	24	80	33	43
142 2 .....	40	30	43	64	44
143 3 .....	21	11	63	14	27
144 4 .....	33	25	76	10	36
145 <b>ROWDEN</b> .....	90	98	100	97	96
146 5 .....	86	94	84	94	90
147 6 .....	16	69	51	57	48
148 7 .....	42	93	83	71	72
149 8 .....	62	92	61	90	76
150 <b>M-315</b> .....	5	11	13	8	9

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
16 John Green, Seed Source Inc., P.O. Box 28, Stoneville, MS 38776					
151 SS 9501 .....	63	99	55	78	74
152 SS 9502 .....	23	56	28	84	48
153 SS 9503 .....	32	69	80	87	67
154 SS 9504 .....	6	33	65	34	35
155 <b>ROWDEN</b> .....	96	97	89	100	97
156 SS 9505 .....	8	32	36	61	34
157 SS 9506 .....	18	12	79	28	34
158 SS 9507 .....	72	17	97	45	58
159 SS 9508 .....	14	37	14	84	37
160 <b>M-315</b> .....	0	0	2	5	2
17 W. P. Sappenfield, 115 Mango Cove, Leesburg, FL 34748					
161 AZ-1 .....	18	40	46	81	46
162 AZ-2 .....	8	19	0	24	13
163 AZ-3 .....	12	84	15	86	49
164 AZ-4 .....	68	12	38	75	48
165 <b>ROWDEN</b> .....	80	94	65	97	84
166 AZ-5 .....	20	20	43	28	28
167 AZ-6 .....	17	23	39	11	22
168 AZ-7 .....	11	16	38	13	20
169 AZ-8 .....	37	56	41	54	47
170 <b>M-315</b> .....	0	0	2	2	1
18 Joseph Vasek, Chembred Inc., P.O. Box 1050, Maricopa, AZ 85239-1050					
171 CBX 456 .....	1	13	18	14	12
172 CBX 457 .....	23	0	39	8	17
173 CBX 458 .....	0	11	14	40	16
174 CBX 620 .....	22	32	11	59	31
175 <b>ROWDEN</b> .....	87	72	100	90	87
176 CBX 466 .....	89	22	89	54	63
177 CBX 477 .....	28	11	39	14	23
178 471342 .....	10	8	5	15	9
179 341342 .....	26	3	16	22	17
180 <b>M-315</b> .....	8	15	11	0	9

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Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
19	Doug Wessel, Delta and Pine Land Co., 1305 N VIP Blvd., Casa Grande, AZ 85222					
181	DW-1	99	87	100	60	86
182	DW-2	90	9	88	54	60
183	DW-3	15	19	31	35	25
184	DW-4	88	15	94	23	55
185	<b>ROWDEN</b>	100	72	100	88	90
186	DW-5	40	11	100	46	49
187	DW-6	57	27	32	63	45
188	DW-7	5	5	16	27	13
189	DW-8	51	1	52	36	35
190	<b>M-315</b>	3	4	4	12	6
20	Kathryn M. Glass, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849-5412					
191	Hy Performer HS 44	15	16	6	65	26
192	Hy Performer HS 46	7	44	57	35	36
193	Deltapine DP 5409	30	11	100	25	41
194	Deltapine DPX 0227	10	33	81	78	51
195	<b>ROWDEN</b>	66	76	93	100	84
196	Terra 302	4	64	31	74	44
197	Terra 366	46	10	46	81	46
198	Suregrow 125	23	48	33	88	48
199	Suregrow 404	12	0	6	83	25
200	<b>M-315</b>	2	3	43	22	17
201	Hartz H 1277	10	9	28	52	25
202	Hartz H 1560	3	15	17	35	17
203	Stoneville 474	46	20	86	71	56
204	Stoneville 495	20	7	53	82	41
205	<b>ROWDEN</b>	71	47	80	100	75
206	Chembred CB 1233	19	34	17	78	37
207	Chembred CB 232	2	30	22	44	25
208	UAP X 001	49	59	84	57	63
209	UAP X 003	19	66	61	75	55
210	<b>M-315</b>	5	10	2	0	4

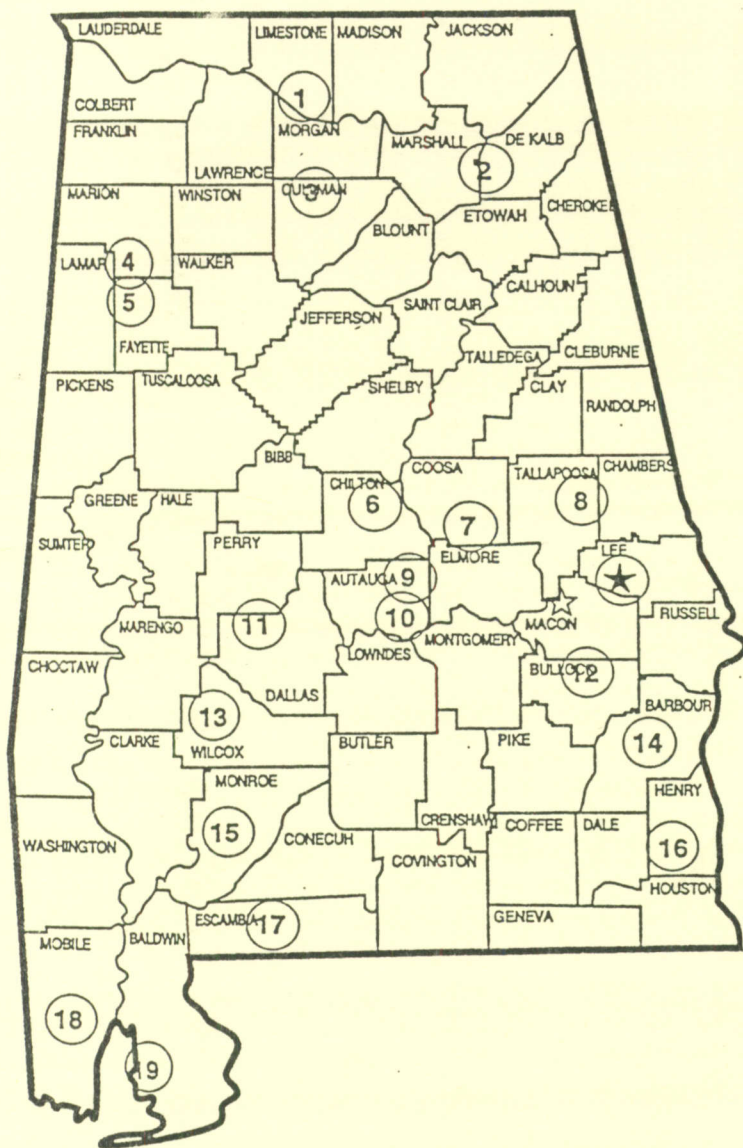




# Alabama's Agricultural Experiment Station System AUBURN UNIVERSITY

★ 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. Forestry Unit, Fayette County.
6. Chilton Area Horticulture Substation,  
Clanton.
7. Forestry Unit, Coosa County.
8. Piedmont Substation,  
Camp Hill.
9. Forestry Unit, Autauga County.
10. Prattville Experiment Field,  
Prattville.
11. Black Belt Substation,  
Marion Junction.
12. The Turnipseed-Ikenberry Place,  
Union Springs.
13. Lower Coastal Plain Substation,  
Camden.
14. Forestry Unit, Barbour County.
15. Monroeville Experiment Field,  
Monroeville.
16. Wiregrass Substation,  
Headland.
17. Brewton Experiment Field,  
Brewton.
18. Ornamental Horticulture Substation,  
Spring Hill.
19. Gulf Coast Substation,  
Fairhope.