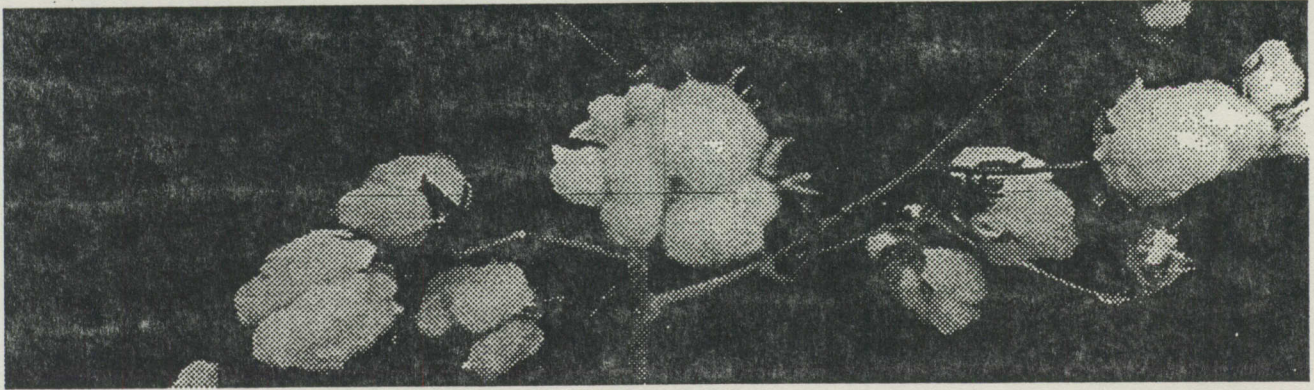


# *1991 Regional Cotton Fusarium Wilt Report*



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Auburn University

Auburn University, Alabama



# 1991 REGIONAL COTTON FUSARIUM WILT REPORT<sup>1</sup>

W.C. JOHNSON<sup>2</sup>

Cotton cultivars and elite breeding lines submitted by 21 cooperators were evaluated for fusarium 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 (Auburn 56) cultivars were included as checks. Auburn 56 was developed at Auburn and released in 1953. It was used as the resistant check in the Regional Fusarium Wilt Test for many years. However, it was replaced when it was no longer grown commercially. Auburn 56 is again being used as the resistant check because, although obsolete, it is the most consistently resistant cultivar available. Rowden was planted in row 5 and every tenth row thereafter (15, 25, ..., 225) and Auburn 56 in row 10 and every tenth row thereafter (20, 30, ..., 220) throughout the test. Plots were planted May 3. Initial plant counts were made on June 21. Wilted plants were also

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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>Professor of Agronomy and Soils

counted and removed on that date. Later, wilted plants were counted and removed on July 8, July 19, August 6, and August 13. The remaining live plants were also counted and recorded on August 13. Percent wilted plants were then determined and mean wilting for a given entry calculated.

Average wilting of the susceptible Rowden was 85, 83, 91, and 88 percent for the four replications (87 percent average). Corresponding wilt percentages for the resistant check, Auburn 56, were 8, 8, 30, and 39 (21 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.

Entries submitted by W. C. Johnson 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.

#### ACKNOWLEDGMENT

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

Information contained herein is available to all persons without regard to race, color, sex, or national origin.

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
<b>1 Jim Mitchell, Stoneville Pedigreed Seed Co., Inc., Box 167, Stoneville, MS 38776</b>					
001 JFM 1.....	55	9	64	91	55
002 JFM 2.....	57	12	97	85	63
003 JFK 3.....	84	40	91	91	76
004 JFM 4.....	23	12	96	33	41
005 ROWDEN.....	89	95	100	76	90
006 JFM 5.....	11	3	71	50	34
007 JFM 6.....	62	44	96	38	60
008 JFM 7.....	89	5	87	15	49
009 JFM 8.....	23	38	43	77	45
010 AUBURN 56.....	5	5	18	6	8
<b>2 C. Wayne Smith, Dept. of Soil &amp; Crop Sciences, Texas A &amp; M Univ., College Station, TX 77843-2474</b>					
011 86T2-2.....	3	5	14	36	14
012 86T2-12.....	61	18	79	85	61
013 86H3-16.....	51	18	87	86	60
014 86G3-30.....	11	10	77	64	40
015 ROWDEN.....	86	84	91	100	90
016 86SD-46.....	99	100	100	99	100
017 86SD-30.....	35	57	76	78	62
018 86G3-1.....	22	14	87	80	51
019 90C-19.....	1	21	46	17	21
020 AUBURN 56.....	10	13	7	33	16
<b>3 Robert R. Bridge, Delta Branch Expt. Sta., Mississippi State Univ., P.O. Box 197, Stoneville, MS 38776</b>					
021 RRB 1.....	4	34	13	34	21
022 RRB 2.....	8	99	62	85	64
023 RRB 3.....	5	25	62	88	45
024 RRB 4.....	13	50	38	54	39
025 ROWDEN.....	91	77	94	99	90
026 RRB 5.....	5	34	38	75	38
027 RRB 6.....	2	37	22	82	36
028 RRB 7.....	1	5	9	86	25
029 RRB 8.....	2	78	4	90	44
030 AUBURN 56.....	2	27	8	76	28

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
<b>4 Keith R. Jones, Delta &amp; Pine Land Co., P.O. Box 157, Scott, MS 38772</b>					
031 DPL 1.....	10	94	75	100	70
032 DPL 2.....	12	62	11	100	46
033 DPL 3.....	32	100	78	87	74
034 DPL 4.....	2	38	55	98	48
035 ROWDEN.....	29	84	100	87	75
036 DPL 5.....	0	12	45	100	39
037 DPL 6.....	0	20	27	44	23
038 DPL 7.....	13	100	68	85	66
039 DPL 8.....	43	78	38	76	59
040 AUBURN 56.....	7	17	8	49	20
<b>5 Richard F. Holland, AgriPro, P.O. Box 427, Axtell, TX 76624</b>					
041 1.....	80	81	37	95	73
042 2.....	5	84	28	86	51
043 3.....	16	52	7	98	43
044 4.....	11	69	25	79	46
045 ROWDEN.....	41	88	17	99	61
046 5.....	6	50	17	100	43
047 6.....	18	23	11	100	38
048 7.....	9	13	4	93	30
049 8.....	12	37	17	100	42
050 AUBURN 56.....	6	14	12	97	32
<b>6 Richard Sheetz, Cargill Hybrid Seeds, Box 2, Aiken, TX 79221</b>					
051 1.....	6	39	21	85	38
052 2.....	8	23	55	92	44
053 3.....	67	64	85	84	75
054 4.....	13	12	65	94	46
055 ROWDEN.....	98	65	98	84	86
056 5.....	31	18	75	89	53
057 6.....	1	15	10	23	12
058 7.....	5	7	17	20	12
059 8.....	3	2	29	23	14
060 AUBURN 56.....	3	3	43	37	22

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
<b>7 A. L. Germany, Stoneville Pedigreed Seed Co., Inc., Box 167, Stoneville, MS 38776</b>						
061	1.....	41	21	83	85	58
062	2.....	63	11	99	100	68
063	3.....	42	25	95	100	66
064	4.....	33	20	100	61	54
065	ROWDEN.....	80	77	98	93	87
066	5.....	16	20	44	59	35
067	6.....	0	14	36	71	30
068	7.....	7	31	50	15	26
069	8.....	6	4	81	15	26
070	AUBURN 56.....	1	2	39	23	16
<b>8 John Green, Seed Source, Inc., 106 4th Street, Leland, MS 38756</b>						
071	SS1.....	0	13	20	2	9
072	SS2.....	16	11	54	1	20
073	SS3.....	8	17	88	7	30
074	SS4.....	57	59	67	14	49
075	ROWDEN.....	87	77	89	75	82
076	SS5.....	11	14	73	25	31
077	SS6.....	3	7	79	37	32
078	SS7.....	6	2	38	9	14
079	SS8.....	45	40	96	39	55
080	AUBURN 56.....	13	5	27	10	14
<b>9 Kamal M. El-Zik, Dept. of Soil &amp; Crop Sci., Texas A &amp; M Univ., College Station, TX 77843-2474</b>						
081	KME-1.....	15	5	49	37	26
082	KME-2.....	10	2	11	8	8
083	KME-3.....	97	57	98	92	86
084	KME-4.....	39	17	77	41	44
085	ROWDEN.....	88	62	97	99	86
086	KME-5.....	17	11	28	19	19
087	KME-6.....	34	18	84	62	50
088	KME-7.....	43	4	55	41	36
089	KME-8.....	32	17	96	99	61
090	AUBURN 56.....	12	2	20	11	11

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
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10	Peggy Thaxton, Dept. of Soil & Crop Sci., Texas A & M Univ., College Station, TX 77843-2474					
091	PMT-1.....	12	52	69	47	45
092	PMT-2.....	16	12	62	88	44
093	PMT-3.....	36	23	94	66	55
094	PMT-4.....	23	34	91	69	54
095	ROWDEN.....	96	59	96	85	84
096	PMT-5.....	16	9	100	72	49
097	PMT-6.....	18	16	84	97	54
098	PMT-7.....	31	27	75	93	56
099	PMT-8.....	80	64	99	93	84
100	AUBURN 56.....	2	8	25	62	24
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11	Warner D. Fisher, Chembred, Inc., Rt. 3, Box 750, Maricopa, AZ 85239					
101	9.....	67	97	67	78	77
102	10.....	92	34	79	100	76
103	11.....	56	89	88	76	77
104	12.....	96	57	18	75	62
105	ROWDEN.....	100	100	95	71	92
106	13.....	44	69	27	96	59
107	14.....	20	14	44	65	36
108	15.....	38	17	22	84	40
109	16.....	37	45	51	95	57
110	AUBURN 56.....	3	14	31	94	36
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12	Verlin Boeder, Chembred, Inc., Rt. 3, Box 750, Maricopa, AZ 85239					
111	1.....	12	31	4	85	33
112	2.....	89	64	13	99	66
113	3.....	96	39	28	99	66
114	4.....	13	31	32	97	43
115	ROWDEN.....	96	100	94	100	98
116	5.....	60	75	69	94	74
117	6.....	51	72	50	100	68
118	7.....	20	24	81	95	55
119	8.....	45	34	63	100	60
120	AUBURN 56.....	17	7	12	50	22



1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
13 Shelby H. Baker, Univ. of Ga. Coastal Plain Station, Tifton, GA 31793					
121 Ga-1.....	21	9	94	2	32
122 Ga-2.....	79	20	86	95	70
123 Ga-3.....	14	7	89	99	52
124 Ga-4.....	35	20	99	88	60
125 ROWDEN.....	96	93	100	99	97
126 Ga-5.....	24	12	88	90	54
127 Ga-6.....	13	10	85	23	33
128 Ga-7.....	11	46	55	11	31
129 Ga-8.....	19	13	30	84	36
130 AUBURN 56.....	5	5	15	36	15
14 Bobby Phipps, Agrigenetics Co., 13974 W. Van Buren, Goodyear, AZ 85338					
131 Ex. 1.....	3	8	3	14	7
132 Ex. 2.....	2	1	16	12	8
133 Ex. 3.....	15	7	58	7	22
134 Ex. 4.....	18	11	31	73	33
135 ROWDEN.....	98	93	99	95	96
136 Ex. 5.....	1	9	14	15	10
137 Ex. 6.....	6	4	62	19	23
138 Ex. 7.....	3	3	15	5	6
139 Ex. 8.....	5	0	10	8	6
140 AUBURN 56.....	0	12	36	6	14
15 Laval M. Verhalen, Dept. of Agronomy, Oklahoma State Univ., Stillwater, OK 74079-0507					
141 OKLA-1.....	1	1	48	14	16
142 OKLA-2.....	6	6	13	8	8
143 OKLA-3.....	22	27	47	7	26
144 OKLA-4.....	17	49	48	13	32
145 ROWDEN.....	63	99	97	61	80
146 OKLA-5.....	4	18	2	0	6
147 OKLA-6.....	18	17	13	6	14
148 OKLA-7.....	5	6	14	1	6
149 OKLA-8.....	1	13	70	36	30
150 AUBURN 56.....	6	14	18	6	11

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
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16	D. Steven Calhoun, Dept. of Agronomy, Louisiana State Univ., Baton Rouge, LA 70803-2110					
151	1.....	6	5	43	4	14
152	2.....	22	14	76	7	30
153	3.....	4	6	46	2	14
154	4.....	20	6	64	6	24
155	ROWDEN.....	96	90	99	70	89
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17	Fred Bourland, Dept. of Agronomy, University of Arkansas, Fayetteville, AR 72701					
156	FB-1.....	0	5	100	16	30
157	FB-2.....	9	0	100	9	30
158	FB-3.....	2	10	100	42	38
159	FB-4.....	5	9	77	51	36
160	AUBURN 56.....	9	0	75	33	29
161	FB-5.....	17	5	81	72	44
162	FB-6.....	12	3	9	30	14
163	FB-7.....	22	14	50	45	33
164	FB-8.....	29	11	85	31	39
165	ROWDEN.....	100	78	98	96	93
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18	Steve Stringer, Cotton Branch Station, P. O. Box 789, Marianna, AR 72360					
166	CBS-1.....	7	16	78	54	39
167	CBS-2.....	61	5	56	30	38
168	CBS-3.....	2	5	39	41	22
169	CBS-4.....	44	5	77	91	54
170	AUBURN 56.....	24	2	72	53	38
171	CBS-5.....	30	11	67	17	31
172	CBS-6.....	67	7	62	82	54
173	CBS-7.....	44	4	53	86	47
174	CBS-8.....	54	8	84	81	57
175	ROWDEN.....	92	73	57	96	80

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
19 W. C. Johnson, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849					
176 COKER 315.....	100	45	66	65	69
177 STONEVILLE 453.....	32	92	66	97	72
178 DES 119.....	14	41	84	79	55
179 CHEMBRED 219.....	23	33	39	99	48
180 AUBURN 56.....	15	2	11	90	30
181 STONEVILLE 907.....	47	26	31	100	51
182 HS 46.....	60	28	41	100	57
183 TERRA C 40.....	17	11	48	91	42
184 PD 3.....	64	43	77	63	62
185 ROWDEN.....	100	69	90	100	90
186 DELTAPINE 50.....	63	17	84	85	62
187 GEORGIA KING.....	67	43	88	58	64
188 SS 35.....	44	12	88	44	47
189 SUREGROW 1001.....	40	40	90	40	52
190 AUBURN 56.....	10	0	55	56	30
191 STONEVILLE LA 887..	20	8	73	36	34
192 DELTAPINE 90.....	18	9	89	88	51
193 COKER 320.....	12	7	88	63	42
194 KC 311.....	46	17	98	73	58
195 ROWDEN.....	75	77	98	99	87
196 DELTAPINE 5415.....	47	17	84	57	51
197 SS 533.....	58	49	99	81	72
198 TERRA 207.....	21	6	14	18	15
199 HS 23.....	14	4	57	35	28
200 AUBURN 56.....	9	9	52	23	23
201 DELTAPINE 5690.....	10	13	76	47	36
202 CHEMBRED 1135.....	14	26	46	38	31
203 COKER 130.....	9	4	35	41	22
204 DELTAPINE 20.....	8	23	62	21	28
205 ROWDEN.....	68	97	100	82	87
206 DELTAPINE 51.....	22	11	78	76	47
207 CHEMBRED 407.....	40	13	40	94	47
208 TROPICAL 225.....	22	10	71	76	45
209 CB 333.....	34	22	100	82	60
210 AUBURN 56.....	5	7	61	14	22
211 STONEVILLE 324.....	17	56	100	97	68
212 PAYMASTER HS 26....	0	1	16	5	6
213 TIFCOT 56.....	19	40	99	84	60
214 STONEVILLE 825.....	24	97	94	99	78
215 ROWDEN.....	79	94	94	99	92

1991 FUSARIUM WILT TEST  
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
20 Freddy Miller, Terra International, P. O. Box 171376, Memphis, TN 38187-1376					
216 90-292-91E.....	9	36	10	2	14
217 90-365-91E.....	30	45	40	5	30
21 Dunn Delinting, Rt. 4, Box 431, Seminole, TX 79360					
218 D 400.....	31	23	9	6	17
219 D 1697.....	62	64	18	4	37
220 AUBURN 56.....	7	8	8	1	6
221 D 1850.....	35	70	34	58	49
222 D 2461.....	29	62	59	47	49
223 D 2472.....	67	32	48	21	42
224 DHS-120.....	85	82	21	7	49
225 ROWDEN.....	100	100	93	70	91



