

1990 REGIONAL COTTON FUSARIUM WILT REPORT



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W.C. JOHNSON²

Cotton cultivars and elite breeding lines submitted by 22 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 (S-35) cultivars were included as checks. S-35 is a cultivar developed by Seed Source Inc., which is related to McNair 235 and similar in wilt resistance. S-35 was not a satisfactory resistant check and will be replaced in 1991. Rowden was planted in row 5 and every tenth row thereafter (15, 25, ..., 285) and S-35 in row 10 and every tenth row thereafter (20, 30, ..., 280) throughout the test. Plots were planted May 16. Initial plant counts were made on June 19. Wilted plants were also counted and removed on that date. Later, wilted plants were counted and removed on June 28, July 16, July 31, August 22, and September 6. The remaining live plants were counted and recorded on September 7. Percent wilted plants were then determined and mean wilting for a given entry calculated.

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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Average wilting of the susceptible Rowden was 94, 83, 63, and 88 percent for the four replications (82 percent average). Corresponding wilt percentages for the resistant check, S-35, were 59, 33, 18, and 32 (36 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 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 race, color, sex, or national origin.

1990 FUSARIUM WILT TEST
PLANT BREEDING UNIT, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
1 Keith R. Jones, Delta & Pine Land Co., P O Box 157, Scott, MS 38772					
001 DPL-1.....	1	75	50	22	37
002 DPL-2.....	21	59	28	47	39
003 DPL-3.....	89	100	67	9	66
004 DPL-4.....	100	39	16	11	42
005 ROWDEN.....	100	100	70	75	86
006 DPL-5.....	93	47	15	47	50
007 DPL-6.....	96	45	16	3	40
008 DPL-7.....	96	58	36	5	49
009 DPL-8.....	100	86	39	2	57
010 S-35.....	90	22	11	54	44
2 Luther S, Bird, Dept. of Plant Path. & Micro., Texas A & M Univ., College Station, TX 77843-2132					
011 LB-1.....	100	48	36	75	65
012 LB-2.....	100	85	81	58	81
013 LB-3.....	44	99	98	87	82
014 LB-4.....	88	100	44	50	70
015 ROWDEN.....	100	100	80	87	92
016 LB-5.....	3	58	7	16	21
017 LB-6.....	10	32	15	3	15
018 LB-7.....	74	96	41	46	64
019 LB-8.....	90	75	46	37	62
020 S-35.....	82	45	56	28	53
3 Warner Fisher, Chembred, Inc., Rt. 3, Box 750, Maricopa, AZ 85239					
021 11.....	42	61	19	37	40
022 12.....	70	100	23	57	62
023 13.....	16	100	21	7	36
024 14.....	20	99	27	86	60
025 ROWDEN.....	96	84	19	100	75
026 15.....	32	78	4	96	52
027 16.....	29	92	12	99	58
028 17.....	87	75	27	92	70
029 18.....	82	58	6	96	60
030 S-35.....	41	15	11	87	38

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	1	2	3	4	Mean
4 Richard Sheetz, Cargill Hybrid Seeds, Box 2, Aiken, TX 79221					
031 1.....	11	30	6	72	30
032 2.....	57	74	4	59	48
033 3.....	85	38	12	98	58
034 4.....	74	12	4	91	45
035 ROWDEN.....	100	81	30	86	74
036 5.....	37	18	2	75	33
037 6.....	89	21	2	34	36
038 7.....	40	12	15	44	28
039 8.....	21	16	8	44	22
040 S-35.....	25	41	6	68	35
5 Robert R. Bridge, Delta Branch Expt. Sta., MS State Univ. P.O. Box 197, Stoneville, MS 38776					
041 RRB-1.....	31	23	19	86	40
042 RRB-2.....	58	31	6	41	34
043 RRB-3.....	21	59	10	26	29
044 RRB-4.....	31	59	6	59	39
045 ROWDEN.....	100	99	27	100	82
046 RRB-5.....	64	67	11	68	52
047 RRB-6.....	75	51	6	14	36
048 RRB-7.....	72	71	12	49	51
049 RRB-8.....	91	78	20	24	53
050 S-35.....	55	9	1	21	22
6 John L. Smith, Ranger Seed Co., Box 1288, Tahoka, TX 79373					
051 RSC#1.....	96	24	8	--	43
052 RSC#2.....	69	57	33	68	57
053 RSC#3.....	92	100	25	61	70
054 RSC#4.....	70	84	36	100	72
055 ROWDEN.....	91	97	88	100	94
056 RSC#5.....	22	29	18	19	22
057 RSC#6.....	25	100	67	21	53
058 RSC#7.....	76	25	47	11	40
059 RSC#8.....	64	17	3	3	22
060 S-35.....	74	11	14	11	28

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	1	2	3	4	Mean
7 Peggy Thaxton, Dept. of Soil & Crop Sci., Texas A & M Univ., College Station, TX 77843-2474					
061 PMT-1.....	100	61	94	39	74
062 PMT-2.....	100	20	57	10	47
063 PMT-3.....	100	23	100	99	80
064 PMT-4.....	100	30	17	11	40
065 ROWDEN.....	100	98	98	98	98
066 PMT-5.....	96	64	19	100	70
067 PMT-6.....	100	76	85	100	90
068 PMT-7.....	99	58	29	65	63
069 PMT-8.....	71	61	18	48	50
070 S-35.....	35	100	62	24	5
8 Kamal M. El-Zik, Dept. of Soil & Crop Sci., Texas A & M Univ., College Station, TX 77843-2474					
071 KME-1.....	66	99	10	19	48
072 KME-2.....	9	58	14	9	22
073 KME-3.....	60	100	44	67	68
074 KME-4.....	40	100	27	15	46
ROWDEN.....	100	100	100	98	100
076 KME-5.....	68	96	51	63	70
077 KME-6.....	9	90	10	65	44
078 KME-7.....	45	93	5	81	56
079 KME-8.....	64	100	50	92	76
080 S-35.....	48	100	18	77	61
9 John Green, Seed Source, Inc., 106 4th Street, Leland, MS 38756					
081 SS1.....	56	89	58	100	76
082 SS2.....	44	85	27	96	63
083 SS3.....	18	100	39	100	64
084 SS4.....	55	57	9	52	43
085 ROWDEN.....	98	100	86	100	96
086 SS5.....	7	53	17	60	34
087 SS6.....	26	73	4	78	45
088 SS7.....	24	68	23	99	54
089 SS8.....	54	17	0	38	27
090 S-35.....	50	17	2	43	28

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
10 Lynn McDonald, Stoneville Pedigreed Seed Co., Inc., Box 167, Stoneville, MS 38776					
091 St1.....	89	63	4	52	52
092 St2.....	46	59	2	49	39
093 St3.....	80	59	15	61	54
094 St4.....	63	28	13	86	48
095 ROWDEN.....	96	65	14	100	69
096 St5.....	42	38	12	93	46
097 St6.....	81	27	6	100	54
St7.....	99	38	4	98	60
099 St8.....	39	90	4	75	52
100 S-35.....	26	52	2	41	30
11 Shelby H. Baker, Univ. of Ga. Coastal Plain Station, Tifton, GA 31793					
101 GA-1.....	81	57	2	66	52
102 GA-2.....	89	27	8	27	38
103 GA-3.....	92	34	18	39	46
104 GA-4.....	100	20	6	86	53
105 ROWDEN.....	99	86	91	70	86
106 GA-5.....	95	15	6	45	40
107 GA-6.....	100	11	1	16	32
108 GA-7.....	98	66	17	27	52
109 GA-8.....	100	53	2	59	54
110 S-35.....	56	98	2	75	58
12 Bobby Phipps, Agrigenetics Co., 13974 W. Van Buren, Goodyear, AZ 85338					
111 1.....	19	2	1	12	8
112 2.....	13	11	5	22	13
113 3.....	2	22	3	5	8
114 4.....	6	12	4	36	22
115 ROWDEN.....	99	25	21	54	50
116 5.....	99	10	9	6	31
117 6.....	89	17	18	8	33
118 7.....	87	18	25	12	36
119 8.....	16	3	11	2	8
120 S-35.....	80	10	34	14	34

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Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
13 Steve R. Miller, Northrup King, Route 1 Box 39, Leland, MS 38756					
121 C1.....	93	75	70	37	69
122 C2.....	66	36	34	49	46
123 C3.....	100	20	48	98	66
124 C4.....	96	64	45	63	67
125 ROWDEN.....	97	98	42	75	78
126 C5.....	79	100	23	33	59
127 C6.....	76	100	17	57	62
128 C7.....	66	24	22	28	35
129 C8.....	70	100	39	46	64
130 S-35.....	53	87	15	14	42
14 Steve Stringer, Cotton Branch Station, P.O. Box 789 Marianna, AR 72360					
131 SS-1.....	34	18	51	28	23
132 SS-2.....	93	64	9	6	43
133 SS-3.....	56	45	36	83	55
134 SS-4.....	6	88	7	39	50
135 ROWDEN.....	100	100	79	97	94
136 SS-5.....	33	34	5	21	23
137 SS-6.....	10	7	2	62	20
138 SS-7.....	10	100	2	81	48
139 SS-8.....	13	100	4	100	54
140 S-35.....	6	13	11	24	14
15 Fred Bourland, Dept. of Agron., Univ. Arkansas, Fayetteville, AR 72701					
141 FB-1.....	31	16	7	43	24
142 FB-2.....	31	40	15	14	25
143 FB-3.....	29	29	1	19	20
144 FB-4.....	35	35	15	21	26
145 ROWDEN.....	100	64	71	84	80
146 FB-5.....	95	8	3	4	28
147 FB-6.....	30	10	0	23	16
148 FB-7.....	21	68	4	24	29
149 FB-8.....	85	31	3	17	34
150 S-35.....	71	11	0	61	36

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	1	2	3	4	Mean
16 Jack E. Jones, Dept. of Agron., 104 Madison B. Sturgiss Hall, LSU, Baton Rouge, LA 70803-2110					
151 1.....	70	40	7	73	48
152 2.....	65	55	2	99	55
153 3.....	46	6	8	94	38
154 4.....	88	23	7	25	36
155 Rowden.....	99	91	20	100	78
156 5.....	100	100	3	93	74
157 7.....	100	49	0	30	45
158 8.....	53	4	0	3	15
159 9.....	14	4	3	5	6
160 S-35.....	74	98	2	19	48
17 Laval Verhalen, Dept. Agronomy, Oklahoma State Univ., Stillwater, OK 74079-0507					
161 OKLA 1.....	75	55	68	34	58
162 OKLA 2.....	47	18	4	31	25
163 OKLA 3.....	96	4	8	17	31
164 OKLA 4.....	81	46	2	23	38
165 ROWDEN.....	100	95	31	100	82
166 OKLA 5.....	80	28	10	61	45
167 OKLA 6.....	12	7	7	26	13
168 OKLA 7.....	29	12	6	1	12
169 OKLA 8.....	95	36	9	72	53
170 S-35.....	59	22	3	5	22
18 C. C. Green, Cotton Production Research Unit, P.O. Box 2131, Florence, SC 29503					
171 PD 5246.....	78	9	9	11	27
172 PD 5300.....	91	12	3	10	29
173 PD 5358.....	77	14	8	23	30
174 PD 5363.....	100	19	10	9	34
175 ROWDEN.....	92	73	13	95	68
176 PD 5380.....	82	18	5	20	31
177 PD 5472.....	97	48	4	0	37
178 PD 5529.....	54	20	6	10	22
179 PD 5582.....	85	37	21	45	47
180 S-35.....	94	13	11	54	43

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	1	2	3	4	Mean
19 Verlin Boeder, CHEMBRED, Route 3, Box 750, Maricopa, AZ 85239					
191 1.....	58	10	18	66	38
192 2.....	57	3	6	64	32
193 3.....	29	9	8	84	32
194 4.....	17	2	14	16	12
195 ROWDEN.....	71	83	32	100	72
196 5.....	84	4	19	8	29
197 6.....	92	1	16	24	33
198 7.....	65	20	15	20	30
199 8.....	43	61	20	15	35
200 S-35.....	39	18	24	10	23
20 Curtis Williams, Hartz Seed, P.O. Box 946, Stuttgart, AR 72160-0946					
201 HX 1014.....	100	92	73	99	91
202 HX 1022.....	89	19	74	99	70
203 HX 1024.....	74	41	3	50	42
204 HX 1120.....	39	14	10	11	18
205 ROWDEN.....	100	44	75	70	72
206 HX 1130.....	99	17	50	96	66
207 HX 1416.....	100	26	4	87	54
208 HX 1432.....	95	84	8	83	68
21 David Kattes, Von Roeder Seed Farm, Rt. 1 Box 80, Snyder, TX					
209 VR-86.....	90	6	4	54	38
210 S-35.....	31	2	3	14	12
211 VR-130.....	27	37	5	13	20
212 VR-1072.....	93	43	9	63	52

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	1	2	3	4	Mean
22 W. C. Johnson, Dept. of Agron., Auburn Univ., Auburn University, AL 36849					
213 Terra C 40.....	100	41	2	33	44
214 Coker 320.....	73	64	5	58	50
215 ROWDEN.....	90	100	100	98	97
216 Stoneville 825.....	98	92	59	100	87
217 Tifcot 56.....	81	95	33	20	57
218 HS 46.....	79	53	21	36	47
219 Georgia King.....	100	48	9	23	45
220 S-35.....	99	22	8	16	36
221 Suregrow 55.....	100	37	3	56	49
222 Deltapine 20.....	97	39	4	84	56
223 CB 407.....	100	10	20	6	34
224 Auburn 56.....	55	23	3	1	20
225 ROWDEN.....	100	98	96	25	80
226 PD 3.....	100	51	48	4	51
227 HS 23.....	97	13	37	7	38
228 Tropical 225.....	98	4	31	1	32
229 Deltapine 50.....	100	9	100	4	53
230 S-35.....	100	15	69	2	46
231 Coker 130.....	93	18	62	5	44
232 Hartz 1014.....	94	100	100	34	82
233 Suregrow 1001.....	83	24	80	2	47
234 Delcot 344.....	21	21	46	0	22
235 ROWDEN.....	74	99	99	98	92
236 Coker 139.....	82	6	75	36	50
237 DES 119.....	80	6	93	15	48
238 KC 311.....	52	4	56	20	33
239 Deltapine 51.....	60	1	51	32	36
240 S-35.....	58	5	66	14	36
241 KC 380.....	66	15	100	88	67
242 Terra C 207.....	44	3	83	72	50
243 Stoneville LA 887.....	11	0	72	28	28
244 Coker 315.....	85	45	97	80	77
245 ROWDEN.....	82	21	100	100	76
246 Deltapine 90.....	17	3	8	21	12
247 CB 219.....	93	3	28	30	38
248 Stoneville 453.....	100	15	47	86	62
249 Coker 84-828.....	88	12	53	23	44
250 S-35.....	82	8	30	30	38
251 Deltapine 5690.....	77	8	12	39	34
252 CB 1135.....	100	4	11	28	36
253 Stoneville 506.....	96	3	16	30	36
254 Deltapine 5614.....	52	3	8	10	18
255 ROWDEN.....	100	76	85	99	90
256 Deltapine 5415.....	50	2	31	7	22

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	1	2	3	4	Mean
W.C. Johnson (Continued)					
257 Stoneville 907.....	75	8	17	18	30
258 CB 232.....	51	5	23	21	25
259 CB x 1232.....	24	52	72	6	38
260 S-35.....	11	12	1	12	9
Rowden mean.....	94	83	63	88	82
S-35 mean.....	59	33	18	32	36