

**REPORT OF THE VERTICILLIUM WILT AND
FUSARIUM WILT COMMITTEE — 1997**
Peggy M. Thaxton, Chairman
Research Scientist, Texas A&M University
College Station, TX

Alabama

William S. Gazaway, Auburn University. For Alabama, Fusarium wilt was not a serious problem except in a few areas around the Tallassee river bottom land (i.e. central Alabama just east of Montgomery). Few of these fields are plant in cotton these days. Verticillium wilt caused about 30% loss in one forty acre cotton field in Cherokee County (Northeast Alabama). Although conditions late in the season favored verticillium wilt, few other fields exhibited wilt problems. Lack of a serious problem in north Alabama where Verticillium has been a minor but chronic problem could possibly be attributed to cotton varieties with some disease tolerance.

1997 National Fusarium Wilt Cotton Report

Kathryn M. Glass and William S. Gazaway, Department of Agronomy and Soils, Auburn University, Department of Plant Pathology, Auburn University, Auburn University, AL. 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. *Information contained herein is available to all persons regardless of race, gender, or national origin.*

Cotton cultivars and elite breeding lines submitted by 27 cooperators were evaluated for Fusarium wilt resistance under field conditions at the Plant Breeding Unit, E. V. Smith Research Center, Tallassee, Alabama. 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 replicates of entries and checks, arranged in a block design, were evaluated. Both susceptible (Rowden) and resistant (M-315) cultivars were included as checks. 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 14. Initial plant counts were made on June 19. Wilted plants were counted and removed on July 1, July 18, August 6, August 28 and September 16. The remaining live plants were counted and recorded on September 16. Percent wilted plants were then determined and mean wilting for a given entry calculated.

Average wilting of the susceptible Rowden was 80, 90, 85, and 79 percent for the four replicates (84 percent average). Corresponding wilt percentages for the resistant check, M-315, were 22, 25, 26, and 22 percent (24 percent average). Critical evaluation of a given entry should be made relative to the checks closest to the entry within each replicate. 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 made in 1994, revealed that southern root-knot (*Meloidogyne incognita*) and lance (*Hoplolaimus galeatus*) are two predominant nematode species in the test plots. Other nematode genera present 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.

Root-knot nematode damage was heavy on cotton roots of all varieties including the susceptible cultivar, Rowden, this past growing season. Most cotton varieties and cotton lines had a very high root-knot galling indices this year.

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.

1997 Fusarium Wilt Test					
E. V. Smith Research Center, Tallassee, Alabama					
Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
1 W. P. Sappenfield, 115 Mango Cove, Leesburg, FL 34748					
001 WPS 1	9	48	11	17	21
002 WPS 2	6	55	57	22	35
003 WPS 3	8	57	54	28	37
004 WPS 4	35	32	20	29	29
005 ROWDEN	71	88	77	86	81
006 WPS 5	35	45	75	49	51
007 WPS 6	31	57	57	35	45
008 WPS 7	17	19	52	20	27
009 WPS 8	2	10	60	39	27
010 M-315	0	15	48	24	22
2 John Green, Seed Source Inc., P.O. Box 28, Stoneville, MS 38776					
011 SS 1	40	17	96	44	49
012 SS 2	18	27	24	11	20
013 SS 3	49	41	44	18	38
014 SS 4	13	38	32	13	24
015 ROWDEN	90	93	54	60	74
016 SS 5	71	38	66	57	58
017 SS 6	33	39	59	35	42
018 SS 7	15	42	47	76	45
019 SS 8	7	9	31	26	18
020 M-315	15	17	13	25	17

3 Shelby H. Baker, Univ. of Georgia, Coastal Plain Station, P.O. Box 748, Tifton, GA 31793

021 GA 1	53	33	50	22	39
022 GA 2	57	28	51	41	44
023 GA 3	41	19	20	36	29
024 GA 4	11	22	41	46	30
025 ROWDEN	92	87	73	58	77
026 GA 5	71	34	49	49	51
027 GA 6	39	47	51	51	47
028 GA 7	46	20	65	32	41
029 GA 8	33	33	46	29	36
030 M-315	31	42	32	18	31

4 Bob Bridge, Sure Grow Inc., P.O. Box 312, Leland, MS 38756

031 SG 1	59	78	51	35	56
032 SG 2	69	43	79	68	65
033 SG 3	32	35	55	25	37
034 SG 4	32	25	42	56	39
035 ROWDEN	100	49	74	94	79
036 SG 5	26	32	51	34	36
037 SG 6	17	22	52	42	33
038 SG 7	13	28	56	37	33
039 SG 8	14	39	43	36	33
040 M-315	17	29	29	15	22

5 Don Keim, Delta and Pine Land Co., 100 Main Street, Scott, MS 38772

41 5863	17	28	43	75	41
042 28429	4	28	34	23	22
043 6314	32	38	58	30	39
044 6065	37	36	62	33	42
045 ROWDEN	78	72	94	84	82
046 6570	48	80	88	59	69
047 15947	35	31	42	34	35
048 5093	45	63	54	35	49
049 5096	25	39	46	20	33
050 M-315	15	27	45	37	31

6 Cindy Green, Delta and Pine Land Co., P.O. Box 1529, Hartsville, SC 29550

051 1	71	30	92	54	62
052 2	18	22	60	33	33
053 3	79	75	71	47	68
054 4	67	43	56	20	46
055 ROWDEN	100	100	90	94	96
056 5	31	68	52	45	49
057 6	12	48	38	45	36
058 7	42	63	60	43	52
059 8	51	98	82	95	81
060 M-315	18	27	14	15	18

7 Richard Sheetz, Paymaster Cottonseed, P.O. Box 8, Aiken, TX 79221

061 1	25	9	4	60	24
062 2	17	25	47	19	27
063 3	0	37	30	2	17
064 4	8	25	4	7	11
065 ROWDEN	33	100	89	79	76
066 5	16	30	24	16	22
067 6	9	23	21	15	17
068 7	11	36	39	25	28
069 8	7	14	22	27	17
070 M-315	0	33	43	35	28

8 Steve Calhoun, Mississippi State Univ., P.O. Box 197, Stoneville, MS 38776

071 1	14	69	67	62	53
072 2	9	48	35	33	31
073 3	12	47	43	12	28
074 4	19	51	40	10	30
075 ROWDEN	37	91	94	64	72
076 5	13	31	30	47	30
077 6	2	40	75	40	39
078 7	5	21	21	33	20
079 8	2	33	62	57	39
080 M-315	50	28	35	17	33

9 O. Lloyd May, USDA-ARS, 2200 Pocket Road, Florence, SC 29506-9706

081 1	58	40	29	45	43
082 2	73	59	57	34	56
083 3	45	37	33	27	36
084 4	56	34	72	58	55
085 ROWDEN	74	87	87	77	81
086 5	75	48	67	67	64
087 6	46	50	57	54	52
088 7	31	69	100	73	68
089 8	42	79	57	75	63
090 M-315	28	41	19	17	26

10 Peggy Thaxton, Department of Soil & Crop Sciences, Texas A & M University, College Station, TX 77843-2474

091 PMT-1	15	50	24	67	39
092 PMT-2	47	41	61	77	57
093 PMT-3	69	67	93	57	71
094 PMT-4	23	23	41	35	31
095 ROWDEN	91	93	84	87	89
096 PMT-5	16	31	74	41	40
097 PMT-6	34	67	33	56	48
098 PMT-7	34	57	84	57	58
099 PMT-8	19	16	13	50	24
100 M-315	13	38	33	0	21

11 Jim Mitchell, Paymaster Cottonseed, 2476 Hwy. 130 East, Stuttgart, AR 72160

101 1	50	38	56	44	47
102 2	46	24	84	63	54
103 3	40	83	91	89	76
104 4	13	18	28	50	27
105 ROWDEN	40	93	64	93	72
106 5	11	26	58	39	34
107 6	25	51	44	26	36
108 7	31	72	39	36	45
109 8	3	15	21	16	14
110 M-315	14	26	20	14	19

12 Michael Swindle, Paymaster Cottonseed, 2476 Hwy. 130 East, Stuttgart, AR 72160

111 1	19	19	28	3	17
112 2	32	21	47	28	32
113 3	25	30	38	35	32
114 4	55	42	65	27	47
115 ROWDEN	65	69	92	95	80
116 5	57	58	77	45	59
117 6	56	91	88	33	67
118 7	52	92	62	41	62
119 8	96	88	95	93	93
120 M-315	33	14	35	28	28

13 Laval M. Verhalen, Dept. of Agronomy, Oklahoma State Univ., Stillwater, OK 74078

121 OKLA-1	22	34	14	41	28
122 OKLA-2	60	45	57	37	50
123 OKLA-3	13	40	71	18	35
124 OKLA-4	17	33	53	6	27
125 ROWDEN	94	94	96	81	92
126 OKLA-5	29	42	34	28	33
127 OKLA-6	54	33	59	26	43
128 OKLA-7	24	16	29	27	24
129 OKLA-8	6	11	24	12	13
130 M-315	15	5	15	17	13

14 Fred Bourland, University of Arkansas, 115 Plant Science Bldg., Fayetteville, AR 72701

131 ARK 1	67	96	80	41	71
132 ARK 2	45	45	50	32	43
133 ARK 3	41	46	15	13	29
134 ARK 4	48	37	59	16	40
135 ROWDEN	87	90	85	66	82
136 ARK 5	38	77	56	33	51
137 ARK 6	21	58	47	42	42
138 ARK 7	33	48	86	45	53
139 ARK 8	7	13	57	51	32
140 M-315	12	23	7	32	18

15 Curtis Williams, Paymaster Cottonseed, 2476 Hwy. 130 South, Stuttgart, AR 72160

141 CW 1	24	55	40	43	41
142 CW 2	30	79	32	43	46
143 CW 3	27	44	32	45	37
144 CW 4	39	37	26	86	47
145 ROWDEN	91	90	95	90	91
146 CW 5	30	37	77	51	49
147 CW 6	42	18	86	56	51
148 CW 7	48	29	48	63	47
149 CW 8	35	52	49	30	41
150 M-315	28	45	9	39	35

16 Jack E. Jones, JaJo Genetics, 246 Maxine Drive, Baton Rouge, LA 70808-6831

151 JJ 1	21	75	41	40	44
152 JJ 2	38	51	56	58	51
153 JJ 3	33	31	63	36	41
154 JJ 4	56	23	61	31	42
155 ROWDEN	90	95	95	91	93
156 JJ 5	32	40	37	30	35
157 JJ 6	35	50	27	59	43
158 JJ 7	13	16	18	23	18
159 JJ 8	49	28	41	32	38
160 M-315	20	25	0	17	15

17 Freddie M. Miller, Terra International, Inc., P.O. Box 171376, Memphis, TN 38187

161 1	14	50	80	78	56
162 2	44	43	85	33	51
163 3	25	44	62	30	40
164 4	60	73	53	35	55
165 ROWDEN	87	92	91	53	81
166 5	50	40	79	25	48
167 6	61	51	47	44	51
168 7	41	56	32	16	36
169 8	27	26	17	47	29
170 M-315	23	15	34	44	29

18 Bill Fagala, Terra International Inc., 612 Centre Grove Circle, Jonesboro, AR 72401

171 1	29	25	24	28	26
172 2	53	31	41	45	42
173 3	14	28	56	26	31
174 4	65	75	90	55	71
175 ROWDEN	100	96	87	64	87
176 5	18	51	20	26	29
177 6	41	49	17	24	33
178 7	64	45	39	52	50
179 8	94	79	42	43	65
180 M-315	50	15	11	0	19

19 Doug Wessel, Delta and Pine Land Co., 1305 N VIP Blvd., Casa Grande, AZ 85222

181 1	26	16	18	19	20
182 2	50	20	25	14	27
183 3	62	23	57	36	45
184 4	88	76	88	89	85
185 ROWDEN	88	96	90	90	91
186 5	69	69	36	15	47
187 6	72	66	38	34	53

20 Daryl Bowman, Crop Science Dept., North Carolina State University, Raleigh, NC 27695

188 NC 72	56	60	54	36	52
-----------	----	----	----	----	----

21 Donald M. Panter, Stoneville Pedigreed Seed Co., 2409 Commerce Street, Albany, GA 31707

189 DP 1	30	12	16	43	25
190 M-315	30	13	37	21	25
191 DP 2	27	61	47	52	47
192 DP 3	64	37	20	23	36
193 DP 4	58	75	57	66	64
194 DP 5	71	85	59	44	65
195 ROWDEN	100	86	83	62	83
196 DP 6	44	85	55	67	63
197 DP 7	17	51	17	13	25

22 Bill Anderson, Stoneville Pedigreed Seed Co., 2409 Commerce Street, Albany, GA 31707

198 BA 1	68	70	65	7	52
199 BA 2	92	97	97	88	94
200 M-315	34	28	30	17	27
201 BA 3	37	28	19	25	27
202 BA 4	41	50	40	51	46
203 BA 5	17	29	48	68	40
204 BA 6	33	37	56	67	48
205 ROWDEN	76	98	76	79	82
206 BA 7	53	79	100	62	73

23 Mark Barefield, Stoneville Pedigreed Seed Co., 2409 Commerce Street, Albany, GA 31707

207 MB 1	40	23	77	48	47
208 MB 2	21	20	60	13	29
209 MB 3	74	74	93	45	72
210 M-315	56	33	34	36	40
211 MB 4	80	79	95	94	87
212 MB 5	64	95	84	79	81
213 MB 6	63	83	56	40	61
214 MB 7	65	78	87	38	67
215 ROWDEN	84	95	96	97	93

24 Roger Ward, Stoneville Pedigreed Seed Co., 2409 Commerce Street, Albany, GA 31707

216 RW 1	19	20	46	44	32
217 RW 2	39	43	64	89	59
218 RW 3	40	10	14	65	32
219 RW 4	45	56	27	70	50
220 M-315	6	31	28	16	20
221 RW 5	65	58	69	70	66
222 RW 6	65	96	92	54	77

25 Timothy Drew, Cotton Seed International, P.O. Box 117, Wee Waa 2388 Australia

223 IF 1003	22	36	40	34	33
224 IF 1006	50	73	69	68	65
225 ROWDEN	61	100	86	71	80

26 Terry Weesner, Arizona Processing, Inc., P.O. Box 50609, Phoenix, AZ 85076

226 AZ 1	37	68	68	65	59
227 AZ 2	44	43	29	55	43
228 AZ 3	24	59	29	61	43
229 AZ 4	46	70	39	61	54
230 M-315	12	8	17	20	14
231 AZ 5	43	38	33	30	36
232 AZ 6	50	24	40	50	41
233 AZ 7	23	17	29	30	25
234 AZ 8	56	61	74	52	61
235 ROWDEN	90	98	93	81	91

27 Kathryn M. Glass, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849-5412

236 JAJ0 9556	60	36	19	44	40
237 JAJ0 9569	24	46	48	33	38
238 Stoneville 3M002	78	42	47	53	55
239 Suregrow 821	22	37	34	43	34
240 M-315	6	10	38	35	22