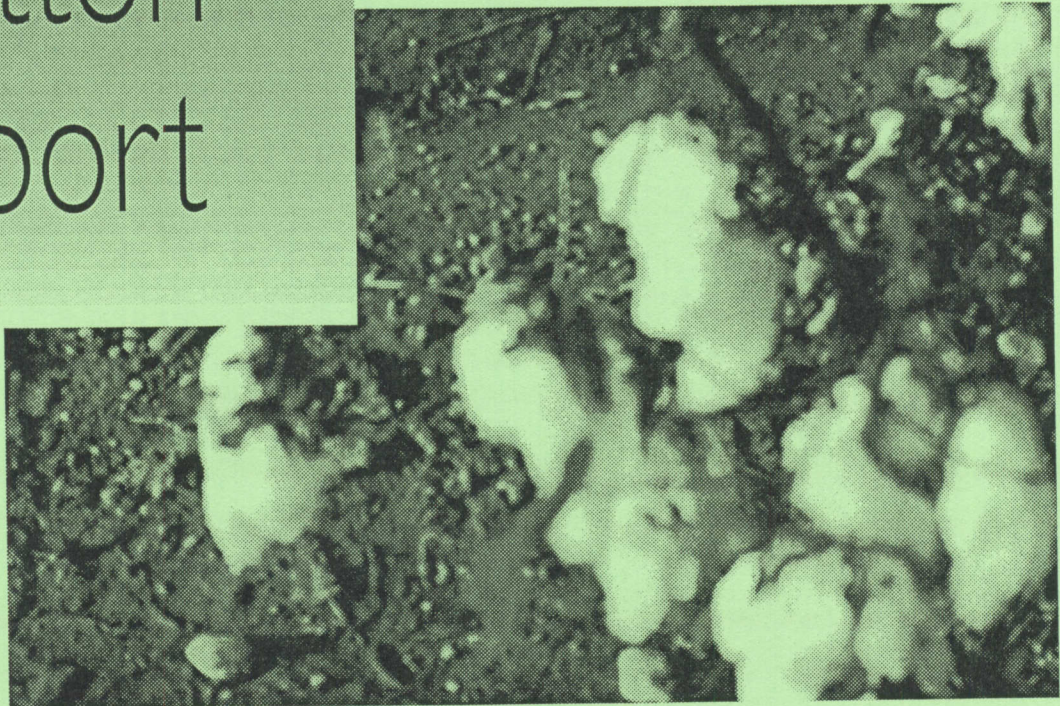


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Dr. James E. Marion, Director

# 1996 National Fusarium Wilt Cotton Report





# 1996 NATIONAL FUSARIUM WILT COTTON REPORT<sup>1</sup>

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

Cotton cultivars and elite breeding lines submitted by 21 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. Rowden was planted in row 5 and every tenth row thereafter (15, 25,...,205) and M-315 in row 10 and every tenth row thereafter (20, 30,...,210) throughout the test. Plots were planted May 17. Initial plant counts were made on June 14. Wilted plants were counted and removed on July 12, July 26, and August 21 . The remaining live plants were counted and recorded on August 21 . Percent wilted plants were then determined and mean wilting for a given entry calculated.

Average wilting of the susceptible Rowden was 8, 3, 7, and 7 percent for the four replications (6 percent average). Corresponding wilt percentages for the resistant check, M-315, were 0, 1, 0, and 1 percent (0.5 percent average). **Critical evaluation of a given entry should be made relative to the checks closest to the entry within each replication.**

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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.

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.

In 1994, 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.

Root-knot nematode damage was unusually light on cotton roots of all varieties including the susceptible cultivar, Rowden. Cooler than normal temperatures in the spring and early fall may have reduced root-knot nematode populations as well as the incidence of Fusarium wilt. Root-knot nematode damage to the cotton in other areas of south and central Alabama was also extremely light.

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.*

1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
<b>1 Donald M. Panter, Stoneville Pedigreed Seed Co., Inc., P.O. Box 167, Stoneville, MS 38776</b>					
001 DMP 1 .....	0	0	0	0	0
002 DMP 2 .....	0	2	0	0	0.5
003 DMP 3 .....	2	0	0	0	0.5
004 DMP 4 .....	0	1	0	0	0.3
005 <b>ROWDEN</b> .....	<b>2</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>2</b>
006 DMP 5 .....	0	0	0	0	0
007 DMP 6 .....	0	0	0	0	0
008 DMP 7 .....	0	1	4	4	2
009 DMP 8 .....	0	0	0	0	0
010 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0.4</b>
<b>2 Freddie M. Miller, Terra International, Inc., P.O. Box 171376, Memphis, TN 38187</b>					
011 1 .....	0	0	2	0	0.4
012 2 .....	0	0	1	0	0.3
013 3 .....	0	0	0	0	0
014 4 .....	0	0	0	0	0
015 <b>ROWDEN</b> .....	<b>4</b>	<b>6</b>	<b>11</b>	<b>7</b>	<b>7</b>
016 5 .....	0	0	0	0	0
017 6 .....	0	0	0	0	0
018 7 .....	0	0	2	4	0
019 8 .....	4	1	1	0	2
020 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>3 Don Keim, Delta and Pine Land Co., 100 Main Street, Scott, MS 38772</b>					
021 DPX 1111 .....	0	0	0	0	0
022 DPX 2048 .....	0	0	2	0	0.4
023 DPX 2166 .....	0	0	1	0	0.3
024 DPX 2044 .....	0	0	0	0	0
025 <b>ROWDEN</b> .....	<b>3</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>
026 DPX 1979 .....	0	0	0	0	0
027 DPX 6954 .....	0	2	2	0	0.8
028 DPX 6926 .....	0	0	0	0	0
029 DPX 0026 .....	0	2	0	1	0.7
030 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

1996 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	0	0	0	0	0
032	CWS 2	0	1	1	5	2
033	CWS 3	0	1	1	0	0.7
034	CWS 4	0	1	3	0	1
035	<b>ROWDEN</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>9</b>	<b>3</b>
036	CWS 5	2	0	4	0	1
037	CWS 6	0	0	3	0	0.8
038	CWS 7	3	2	29	0	8
039	CWS 8	0	0	6	4	3
040	<b>M-315</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>
5 Terry Weesner, Arizona Processing, Inc., P.O. Box 50609, Phoenix, AZ 85076						
041	AZ-1	0	0	0	0	0
042	AZ-2	0	0	0	0	0
043	AZ-3	0	0	0	0	0
044	AZ-4	2	1	0	0	0.9
045	<b>ROWDEN</b>	<b>48</b>	<b>8</b>	<b>23</b>	<b>2</b>	<b>20</b>
046	AZ-5	0	0	2	0	0.4
047	AZ-6	14	0	0	0	3
048	AZ-7	3	0	0	0	0.7
049	AZ-8	11	0	0	0	3
050	<b>M-315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
6 O. Lloyd May, USDA-ARS, Route 1, Box 531, Florence, SC 29501-9603						
051	1	0	3	0	0	0.7
052	2	7	1	3	0	3
053	3	3	0	0	0	0.8
054	4	0	0	4	0	1
055	<b>ROWDEN</b>	<b>5</b>	<b>2</b>	<b>9</b>	<b>0</b>	<b>4</b>
056	5	0	2	3	0	1
057	6	8	0	5	0	3
058	7	4	0	2	0	1
059	8	0	0	7	0	2
060	<b>M 315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication					
	1	2	3	4	Mean	
7 Laval M. Verhalen, Dept. of Agronomy, Oklahoma State University, Stillwater, OK 74078						
061	OKLA-1	0	2	0	0	0.4
062	OKLA-2	0	0	0	0	0
063	OKLA-3	0	0	0	0	0
064	OKLA-4	0	2	0	1	0.7
065	<b>ROWDEN</b>	<b>15</b>	<b>0</b>	<b>20</b>	<b>14</b>	<b>12</b>
066	OKLA-5	0	0	0	2	0.5
067	OKLA-6	0	2	0	0	0.4
068	OKLA-7	0	0	0	0	0
069	OKLA-8	0	0	0	0	0
070	<b>M-315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0.4</b>
8 A.L. Germany, Stoneville Pedigreed Seed Co. Inc., Box 167, Stoneville, MS 38776						
071	ALG-1	0	1	3	0	1
072	ALG-2	0	0	1	0	0.3
073	ALG-3	2	0	3	0	1
074	ALG-4	0	0	0	0	0
075	<b>ROWDEN</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0.6</b>
076	ALG-5	0	0	0	0	0
077	ALG-6	0	0	0	3	0.6
078	ALG-7	0	0	10	0	2
079	ALG-8	0	0	0	0	0
080	<b>M-315</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>11</b>	<b>3</b>
9 Peggy Thaxton, Dept. of Soil & Crop Sci., Texas A&M Univ., College Station, TX 77843-2474						
081	MAR-1	2	1	0	0	0.7
082	MAR-2	0	0	0	0	0
083	MAR-3	0	0	0	0	0
084	MAR-4	4	0	14	7	6
085	<b>ROWDEN</b>	<b>0</b>	<b>11</b>	<b>21</b>	<b>22</b>	<b>14</b>
086	MAR-5	4	1	20	0	6
087	MAR-6	0	0	8	5	3
088	MAR-7	1	1	1	0	1
089	MAR-8	0	0	0	0	0
090	<b>M-315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
10 Richard Sheetz, Paymaster Cottonseed, P.O. Box 8, Aiken, TX 79221					
091 1 .....	0	0	0	0	0
092 2 .....	1	3	0	0	1
093 3 .....	0	0	0	0	0
094 4 .....	0	0	0	0	0
095 <b>ROWDEN</b> .....	<b>21</b>	<b>5</b>	<b>0</b>	<b>12</b>	<b>9</b>
096 5 .....	0	0	0	0	0
097 6 .....	0	0	0	0	0
098 7 .....	0	0	0	0	0
099 8 .....	0	1	0	0	0.3
100 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0.2</b>
11 Doug Wessel, Delta and Pine Land Co., 1305 N VIP Blvd., Casa Grande, AZ 85222					
101 1 .....	0	0	2	0	0.6
102 2 .....	0	0	3	3	1
103 3 .....	0	0	0	0	0
104 4 .....	0	0	0	0	0
105 <b>ROWDEN</b> .....	<b>13</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>5</b>
106 5 .....	0	3	0	0	0.8
107 6 .....	0	0	1	0	0.3
108 7 .....	0	0	1	6	2
109 8 .....	0	0	0	0	0
110 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
12 W. P. Sappenfield, 115 Mango Cove, Leesburg, FL 34748					
111 WPS-1 .....	0	0	1	2	0.7
112 WPS-2 .....	0	0	1	0	0.3
113 WPS-3 .....	0	0	0	0	0
114 WPS-4 .....	2	0	0	0	0.3
115 <b>ROWDEN</b> .....	<b>4</b>	<b>0</b>	<b>15</b>	<b>16</b>	<b>9</b>
116 WPS-5 .....	0	0	0	8	2
117 WPS-6 .....	0	0	0	0	0
118 WPS-7 .....	0	0	0	0	0
119 WPS-8 .....	0	0	0	0	0
120 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
13 John Green, Seed Source Inc., P.O. Box 28, Stoneville, MS 38776					
121 SS-1 .....	3	2	0	0	1
122 SS-2 .....	0	0	0	0	0
123 SS-3 .....	2	0	0	0	0.4
124 SS-4 .....	0	0	0	0	0
125 <b>ROWDEN</b> .....	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>1</b>
126 SS-5 .....	0	10	0	0	2
127 SS-6 .....	0	6	0	0	1
128 SS-7 .....	0	0	0	7	2
129 SS-8 .....	0	0	1	0	0.2
130 <b>M-315</b> .....	<b>2</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>3</b>
14 Shelby H. Baker, Univ. of Georgia, Coastal Plain Station, P.O. Box 748, Tifton, GA 31793					
131 GA 1 .....	0	1	0	2	0.7
132 GA 2 .....	0	0	5	1	2
133 GA 3 .....	0	0	0	0	0
134 GA 4 .....	2	0	0	0	0.5
135 <b>ROWDEN</b> .....	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>
136 GA 5 .....	0	0	0	0	0
137 GA 6 .....	0	0	3	0	0.7
138 GA 7 .....	0	0	0	0	0
139 GA 8 .....	4	2	0	11	4
140 <b>M-315</b> .....	<b>1</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>
15 Cindy Green, Delta and Pine Land Co., P.O. Box 1529, Hartsville, SC 29550					
141 1 .....	8	0	8	0	4
142 2 .....	3	0	0	0	0.7
143 3 .....	0	0	0	2	0.5
144 4 .....	0	0	0	0	0
145 <b>ROWDEN</b> .....	<b>3</b>	<b>2</b>	<b>8</b>	<b>18</b>	<b>8</b>
146 5 .....	0	0	0	0	0
147 6 .....	0	2	0	0	0.5
148 7 .....	0	0	8	0	2
149 8 .....	0	0	6	0	2
150 <b>M-315</b> .....	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0.6</b>

1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
16	Bill Fagala, Terra International Inc., P.O. Box 171376, Memphis, TN 38187				
151	1	0	0	0	0
152	2	5	3	2	3
153	3	0	0	0	0
154	4	0	0	1	2
155	<b>ROWDEN</b>	<b>9</b>	<b>5</b>	<b>9</b>	<b>5</b>
156	5	0	2	0	0
157	6	0	0	0	0
158	7	0	0	0	0
159	8	0	0	0	0
160	<b>M-315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
17	Curtis Williams, Paymaster Technology Corp., Route 2, Box 57, Stuttgart, AR 72160				
161	1	0	0	0	1
162	2	0	0	0	0
163	3	0	1	0	0
164	4	0	1	0	1
165	<b>ROWDEN</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
166	5	0	0	0	0
167	6	0	0	0	0
168	7	0	0	0	0
169	8	0	0	0	0
170	<b>M-315</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
18	Jim Mitchell, Paymaster Technology Corp., Route 2, Box 57, Stuttgart, AR 72160				
171	1	0	3	0	3
172	2	1	0	0	1
173	3	1	0	0	9
174	4	1	5	0	0
175	<b>ROWDEN</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>
176	5	1	0	0	14
177	6	0	0	0	1
178	7	1	0	0	0
179	8	0	0	0	3
180	<b>M-315</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>

1996 FUSARIUM WILT TEST  
E. V. SMITH RESEARCH CENTER, TALLASSEE, ALABAMA

Test entry designation	Percent wilt by replication				
	1	2	3	4	Mean
19 Jack E. Jones, 246 Maxine Drive, Baton Rouge, LA 70808-6831					
181 JJ-1 .....	0	0	0	0	0
182 JJ-2 .....	0	0	1	0	0.3
183 JJ-3 .....	0	0	0	0	0
184 JJ-4 .....	1	0	0	0	0.3
185 <b>ROWDEN</b> .....	<b>28</b>	<b>0</b>	<b>10</b>	<b>5</b>	<b>11</b>
186 JJ-5 .....	3	0	1	0	1
187 JJ-6 .....	0	0	0	1	0.3
20 Daryl Bowman, Crop Science Dept., North Carolina State University, Raleigh, NC 27695					
188 NC 1 .....	0	0	0	1	0.3
189 NC 112 .....	0	1	4	0	1
190 <b>M-315</b> .....	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>1</b>
191 NC 265 .....	0	0	0	0	0
192 NC 258 .....	1	0	0	0	0.3
193 NC 188 .....	13	0	0	0	3
21 Kathryn M. Glass, Dept. of Agronomy and Soils, Auburn University, Auburn University, AL 36849-5412					
194 Hartz H 1277 .....	0	0	0	0	0
195 <b>ROWDEN</b> .....	<b>4</b>	<b>0</b>	<b>4</b>	<b>10</b>	<b>4</b>
196 Terra 302 .....	0	0	0	0	0
197 Terra 366 .....	0	0	2	3	1
198 Suregrow 125 .....	0	0	0	1	0.3
199 Suregrow 404 .....	0	0	0	0	0
200 <b>M-315</b> .....	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>
201 Hartz H 1220 .....	0	0	0	0	0
202 Hartz H 1244 .....	3	0	0	0	0.7
203 Stoneville 474 .....	0	9	2	0	3
204 Stoneville X 47 .....	0	2	0	0	0.4
205 <b>ROWDEN</b> .....	<b>4</b>	<b>1</b>	<b>12</b>	<b>10</b>	<b>7</b>
206 Deltapine NuCotn 33 .....	0	0	1	0	0.3
207 Deltapine NuCotn 35 .....	0	0	0	4	1
208 Hy Performer HS 23 .....	0	8	0	0	2
209 Hy Performer HS 46 .....	0	0	0	6	1
210 <b>M-315</b> .....	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

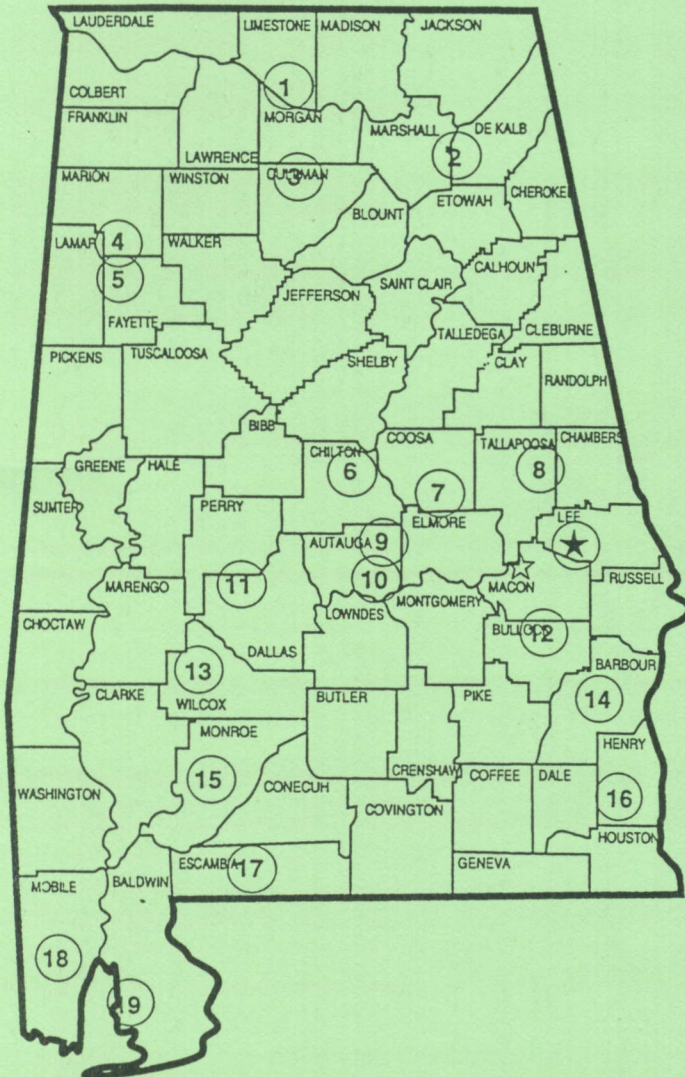




# Alabama's Agricultural Experiment Station System AUBURN UNIVERSITY

★ 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.