

**REGIONAL
COTTON
FUSARIUM
WILT
TEST RESULTS
1979**



November 1979

1979 REGIONAL COTTON FUSARIUM WILT REPORT¹

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Cultivars and elite breeding lines submitted by 20 cooperators were evaluated for fusarium wilt resistance under field conditions at Tallassee, Alabama. These materials were evaluated on a Wickham sandy loam soil which was highly infested with both the fusarium wilt fungus [Fusarium oxysporum Schlect. f. vasinfectum (Atk.) Snyder & Hans.] and root-knot nematodes (Meloidogyne spp.). Both the susceptible ('Rowden') and resistant ('Stoneville 603') cultivars were included as checks. Rowden was planted in row 5 (15, 25, ..., 145) and Stoneville 603 in row 10 (20, 30, ..., 140) and then in every tenth row thereafter throughout the test.

All plots were bedded, 30 ft in length, spaced 40 in apart, and separated by 6-ft alleys. Four replications of the test entries were arranged in a systematically randomized complete block design. Entries were planted May 3 and thinned to one plant every 3 or 4 inches on June 5. Initial live plant counts were taken June 12. Wilted plants were counted and removed five times during the growing season. Final counts of live plants were made on September 6. Percent wilted plants per plot were determined as the difference between initial and final live plant counts. Mean wilting percentages for a given entry were then calculated.

Environmental conditions during the growing season were somewhat unusual. Minimum air temperature was lower than 60 F until May 27 while

¹This is a progress report for information and guidance of cooperators, the interpretation of which may be modified with additional experimentation.

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maximum air temperatures of 90 F or above occurred only on 15 days during the entire test period. In addition, rainfall was somewhat limiting. Regardless of this, a great deal of wilting occurred although considerable variability was evident. Average wilting over the entire test for Rowden was 75% but wilt incidence ranged from 21.1 to 100%. The mean incidence of wilting in Stoneville 603 was only 18% but ranged from 0 to 48.1%. Thus, while extremely resistant or susceptible entries could be easily distinguished, the variation across replications makes an entry with intermediate resistance difficult to classify. Critical evaluation of an entry or comparison between entries should be made relative to the nearest check cultivars.

Entries submitted by Wiley C. Johnson are commonly grown cultivars or highly advanced commercial materials; therefore, they are listed by name. Entries submitted by other cooperators are listed by their coded number. Additional information regarding the genetic background of a specific coded entry should be obtained from the given cooperator.

Regional Cotton Fusarium Wilt Test Results, 1979

Plant Breeding Unit, Tallassee, Alabama

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Larry L. Barton, Rogers Delinted Cottonseed Co., Waco, Texas					
LLB-1	30.6	16.9	17.8	46.4	27.9
LLB-2	38.6	23.1	34.9	15.4	28.0
LLB-3	48.1	15.9	15.3	73.4	38.2
LLB-4	56.9	29.2	27.8	44.4	39.6
Rowden	61.0	24.1	51.5	70.2	51.7
LLB-5	50.9	42.2	48.4	53.1	48.7
Keith R. Jones, Delta & Pine Land Co., Scott, Mississippi					
DPL-1	39.0	23.1	44.2	37.1	35.9
DPL-2	26.6	25.7	25.7	36.0	28.5
DPL-3	22.5	30.0	3.9	14.2	17.7
ST-603	31.4	1.0	5.0	20.0	14.3
DPL-4	59.5	6.2	8.9	5.8	20.1
DPL-5	29.6	15.9	17.9	43.7	26.8
Robert R. Bridge, Miss. State University, Stoneville, Mississippi					
Bridge-1	7.8	41.9	1.4	12.5	15.9
Bridge-2	23.2	15.8	19.1	18.5	19.1
Rowden	53.3	79.3	21.1	100.0	63.4
Bridge-3	21.0	23.3	31.0	7.6	20.7
Bridge-4	6.2	14.3	16.1	10.9	11.9
Bridge-5	32.9	16.7	6.3	4.7	15.1
C. W. Manning, Stoneville Pedigreed Seed Co., Stoneville, Mississippi					
Stoneville-1	16.2	2.7	19.4	0	9.6
ST-603	25.0	37.3	20.7	5.1	22.0
Stoneville-2	12.4	29.7	11.2	10.5	15.9
Stoneville-3	49.4	33.8	21.9	16.1	30.3
Stoneville-4	40.0	19.7	22.2	4.4	21.6
Stoneville-5	49.4	18.5	10.7	8.3	21.7
Jerry L. Baker, Pioneer Hi-Bred Internat'l Inc., Vernon, Texas					
Rowden	70.2	84.7	87.9	84.1	81.7
PR-1	69.9	14.5	38.0	21.2	35.9
PR-2	44.8	32.9	47.6	24.5	37.4
PR-3	26.7	14.3	29.4	10.2	20.1
PR-4	13.1	4.8	11.1	16.1	11.3
ST-603	27.6	2.4	6.3	1.2	9.4
PR-5	53.4	21.4	18.5	11.2	26.1
A. L. Germany, Bobshaw Pedigree Seed Co., Stoneville, Mississippi					
Bobshaw-1	44.7	17.6	5.5	13.6	20.3
Bobshaw-2	50.7	18.1	14.9	27.3	27.7
Bobshaw-3	31.2	22.4	2.5	3.8	15.0
Rowden	93.3	81.1	25.5	90.7	72.7
Bobshaw-4	19.5	24.6	4.8	12.7	15.4
Bobshaw-5	49.2	18.0	16.4	7.0	22.7

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
J. B. Weaver, Jr., Univ. of Georgia, Athens, Georgia					
JBW-1	28.2	36.1	7.3	9.5	20.3
JBW-2	6.5	18.8	10.4	10.3	11.5
ST-603	10.8	13.4	3.7	0	7.0
JBW-3	47.4	60.3	4.9	23.8	34.1
JBW-4	72.9	37.5	4.6	43.7	39.7
JBW-5	35.6	34.1	11.5	5.3	21.6
Jerry D. Carroll, Delta & Pine Land Co., Lubbock, Texas					
JDC-1	97.6	41.6	29.3	32.0	50.1
Rowden	84.3	45.1	67.1	82.6	69.8
JDC-2	30.6	22.2	28.9	42.9	31.1
JDC-3	41.3	82.3	11.9	13.4	37.2
JDC-4	68.8	29.0	34.1	18.4	37.6
JDC-5	39.3	19.7	41.2	41.0	35.3
Henry Webb, Coker Pedigreed Seed Co., Hartsville, South Carolina					
ST-603	14.9	26.5	21.8	2.6	16.5
Coker-1	63.2	19.8	34.8	20.6	34.6
Coker-2	18.2	20.6	54.2	19.1	28.0
Coker-3	36.1	24.7	20.3	15.9	24.3
Coker-4	24.0	20.0	52.6	7.6	26.1
Rowden	100.0	89.3	100.0	100.0	97.3
Coker-5	57.1	23.1	9.3	13.0	25.6
W. P. Sappenfield, Univ. of Mo. Delta Center, Portageville, Missouri					
MO-2	5.7	32.4	16.4	9.4	16.0
MO-3	16.9	21.4	4.5	5.3	12.0
Roger G. Ward, Delta & Pine Land Co., San Joaquin Valley, California					
RGW-1	43.3	29.3	16.7	15.9	26.3
ST-603	21.2	22.9	16.7	2.8	15.9
RGW-2	1.7	19.0	9.8	10.6	10.3
RGW-3	38.6	32.1	6.6	6.1	20.9
RGW-4	25.3	5.5	9.0	3.5	10.8
RGW-5	83.6	55.4	61.3	4.4	51.2
Rowden	99.0	100.0	93.0	76.0	92.0
Gene Douglas, Hollandale Agr. Service, Hollandale, Mississippi					
HAS-1801	21.4	18.4	12.5	19.7	18.0
HAS-1802	29.6	26.0	8.3	7.3	17.8
HAS-1803	19.5	15.2	1.6	1.3	9.4
HAS-1804	48.9	32.1	62.4	0	35.9
ST-603	31.9	32.2	27.8	38.3	32.5
HAS 1805	36.0	7.9	17.5	21.5	20.7
Carl A. Mossberg, Growers Seed Assoc., Lubbock, Texas					
GSA-1	30.4	18.4	32.9	3.5	21.3
GSA-2	27.6	3.8	17.6	3.6	13.1

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Delbert C. Hess, ACCO Seed, Plainview, Texas					
ACCO-1	51.5	14.1	30.4	59.3	38.8
Rowden	88.4	84.5	89.0	100.0	90.5
ACCO-2	31.6	33.8	40.2	76.4	45.5
ACCO-3	61.2	35.7	22.8	82.4	50.5
ACCO-4	31.2	70.2	18.2	24.7	36.1
ACCO-5	64.8	30.6	42.9	52.9	47.8
ST-603	28.0	11.5	12.2	1.9	13.4
Jack E. Jones, Louisiana State University, Baton Rouge, Louisiana					
JLSU-1	24.4	32.1	20.2	9.5	21.5
JLSU-2	17.3	12.1	16.4	30.6	19.1
JLSU-3	20.3	8.4	19.0	11.3	14.7
JLSU-4	59.4	28.0	21.6	41.3	37.6
Rowden	86.0	95.1	94.2	94.4	92.4
JLSU-5	30.6	13.9	18.7	11.1	18.6
JLSU-6	27.0	11.4	32.1	3.6	18.5
Laval M. Verhalen, Okla. State Univ., Stillwater, Oklahoma					
Okla-1	27.8	9.9	10.3	16.7	16.2
Okla-2	30.7	13.1	12.7	39.7	24.1
ST-603	25.7	9.6	27.2	35.1	24.4
Okla-3	61.2	44.4	38.4	23.3	41.8
Okla-4	12.9	16.5	13.0	15.6	14.5
Okla-5	31.2	14.3	11.4	15.3	18.1
T. W. Culp, USDA, SEA, AR, Florence, South Carolina					
Culp-1	27.9	20.5	54.2	17.3	30.0
Rowden	67.1	63.8	98.8	53.4	70.8
Culp-2	17.1	15.6	36.6	20.4	22.4
Culp-3	23.9	34.2	7.2	20.7	21.5
Culp-4	16.2	39.1	69.0	2.9	31.8
Culp-5	85.9	64.2	91.8	18.9	65.2
Wiley C. Johnson, Auburn University, Auburn, Alabama					
ST-603	12.2	14.5	27.4	43.0	24.3
Coker 310	42.0	36.5	30.9	30.1	34.9
Dixie King III	17.6	34.2	12.1	29.5	23.3
Stoneville 213	87.7	51.3	81.8	37.0	64.5
DES-24	40.2	44.7	25.3	9.9	30.0
Rowden	92.6	92.3	77.4	80.8	85.8
McNair 235	12.7	13.1	14.8	26.9	16.9
Brycot 4	86.3	35.6	73.4	43.9	59.8
McNair 220	7.4	19.1	14.9	16.3	14.4
Hancock	40.7	30.8	54.5	90.1	54.0
ST-603	48.1	2.5	7.7	17.1	18.8
Rex 731	35.8	20.3	14.1	2.6	18.2
Deltapine 55	33.3	23.2	5.5	9.9	18.0
Coker 3114	35.2	17.6	16.2	8.3	19.3
DES-56	24.1	29.5	17.7	32.2	25.9
Rowden	36.3	87.7	78.6	89.8	73.1
Delcot 277	43.9	51.1	56.5	29.4	45.2
Vail 7	23.7	60.6	20.4	75.9	45.1
Auburn 56	28.6	17.1	25.0	40.7	27.9

Test entry designation	Percent wilt by replication				Mean
	1	2	3	4	
Wiley C. Johnson, Auburn University, continued					
Coker 420	19.0	18.5	18.0	11.0	16.6
ST-603	16.7	15.4	7.2	4.1	10.9
Coker 3114	19.5	16.9	11.9	1.2	12.4
Deltapine 41	40.5	9.5	16.5	37.4	26.0
Coker 315	59.0	12.5	15.4	16.7	25.9
Deltapine 26	74.4	15.1	13.5	5.5	27.1
Rowden	100.0	47.9	98.8	63.4	77.5
Deltapine 70	64.2	42.5	17.2	9.1	33.3
Coker 304	53.6	12.7	22.4	1.4	22.5
Deltapine 61	29.2	31.2	41.5	5.5	26.9
Stoneville 825	76.1	14.6	100.0	14.1	51.2
ST-603	39.7	7.6	45.7	17.4	27.6
RR-50	30.0	4.7	40.6	10.1	21.3

James L. Helm, McNair Seed Co., Laurinburg, North Carolina 835

McNair-1	47.5	5.1	37.5	6.1	24.1
McNair-2	47.8	5.7	15.9	3.4	18.2
McNair-3	42.9	19.5	19.1	10.6	23.0
Rowden	55.6	24.0	97.6	20.7	49.5
McNair 3150	27.9	12.7	23.0	13.4	19.3
McNair 3151	23.8	14.7	23.9	14.0	19.1

A. J. Kappelman, Jr., USDA, SEA, AR, Auburn, Alabama

AK-1	1.3	11.5	17.1	8.6	9.6
AK-2	10.5	24.3	7.2	9.2	12.8
ST-603	25.0	24.1	19.5	18.8	21.9
AK-3	30.7	0	11.4	20.8	15.7
AK-4	9.7	6.6	19.2	11.1	11.7
AK-5	3.3	14.9	22.9	1.4	10.6
AK-6	21.3	14.5	21.1	32.1	22.3
Rowden	46.7	31.9	44.8	81.1	51.1

