Regional Cotton Fusarium Wilt Report

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1976 REGIONAL COTTON FUSARIUM WILT REPORT[1/]

A. J. Kappelman, Jr.[2/]

Elite breeding lines and cultivars submitted by 17 cooperators were evaluated for resistance to Fusarium wilt. These materials were tested on a field at Tallassee, Alabama, which was highly infested with the Fusarium wilt fungus and root-knot nematodes. This test was originally planted on April 23; however, stands were extremely poor, partially due to unseasonably cold weather. Consequently, the field was disked and the test replanted on May 19. Good stands were obtained from this second planting. The first wilt symptoms did not appear until late July, probably due to the late planting and dry weather through June.

The susceptible ('Rowden') and resistant ('McNair 511') were included as checks. Rowden was planted in row 5 (15, 25, ..., 235) and McNair 511 in row 10 (20, 30, ..., 240) and then in every tenth row thereafter throughout the test. Four replications of the other entries arranged in a systematically randomized complete block design were evaluated.

Initial live plant counts were made June 24. Wilted plants were

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[1/] This is a progress report for information and guidance of cooperators, the interpretation of which may be modified with additional experimentation. Therefore, publication, display or distribution of any data or any statements herein should not be made without prior approval of the Agricultural Research Service, USDA, and the cooperating agency or agencies concerned.

[2/] Research Plant Pathologist, ARS-USDA, and Adjunct Assistant Professor, Department of Agronomy and Soils.

pulled and recorded on July 27, August 12, and September 14. Final live plant counts were also made on September 14. Differences between the initial and final live plant counts were attributed to wilt losses. Percent wilted plants per plot and mean wilting percentages for a given entry were then determined.

Since wilting varied in different areas of a given replication due to the large number of entries (243), as well as over replication, critical evaluation of a given entry should be made relative to those checks closest to the entry within each replication. The mean incidence of wilt in Rowden ranged from 8.2 to 100% and averaged 62.2% for the entire test (96 plots). Average wilting over the entire test for McNair 511 was 7.8% but wilt incidence ranged from 0 to 51.0%.

Regional Cotton Fusarium Wilt Results, 1976

Plant Breeding Unit, Tallassee, Alabama

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
C. W. Manning, Stoneville Pedigreed Seed Co., Stoneville, MS						
Stoneville-1	1	7.9	4.8	4.8	24.4	10.5
Stoneville-2	2	28.0	41.7	13.8	14.9	24.6
Stoneville-3	3	26.3	14.4	31.1	0.0	18.0
Stoneville-4	4	24.1	3.6	9.5	4.7	10.5
Rowden	5	93.8	72.4	65.3	94.7	81.6
Stoneville-5	6	0.0	0.0	15.7	7.8	5.9
Stoneville-6	7	34.2	0.7	0.0	46.7	20.4
Stoneville-7	8	19.2	6.5	8.5	10.5	11.2
Stoneville-8	9	4.9	14.9	7.3	---	9.0
McNair 511	10	13.3	3.4	4.2	9.6	7.6
Stoneville-9	11	38.0	20.0	10.3	5.6	18.5
Stoneville-10	12	5.7	16.9	1.8	12.1	9.1
Keith R. Jones, Delta & Pine Land Co., Scott, MS						
Deltapine-1	13	9.1	0.1	5.3	3.6	4.5
Deltapine-2	14	3.7	0.0	5.2	8.0	4.2
Rowden	15	46.3	100.0	8.2	45.3	50.0
Deltapine-3	16	7.3	18.4	6.8	5.1	9.4
Deltapine-4	17	1.3	13.5	5.2	3.5	5.9
Deltapine-5	18	16.4	11.4	0.9	15.9	11.2
Deltapine-6	19	12.3	35.4	0.9	0.8	12.4
McNair 511	20	14.8	14.5	0.0	0.0	7.3
Deltapine-7	21	9.4	0.0	1.4	4.8	3.9
Deltapine-8	22	5.0	3.4	1.4	8.5	4.6
Deltapine-9	23	14.6	20.6	19.7	4.1	14.8
Deltapine-10	24	12.3	13.0	4.8	27.5	14.4
R. R. Bridge & W. R. Meredith, Jr., Delta Br. Exp. Sta., Stoneville, MS						
Rowden	25	39.5	82.6	13.5	89.2	56.2
B&B-1	26	13.6	0.0	10.8	31.2	13.9
B&B-2	27	16.1	5.1	4.8	7.5	8.4
B&B-3	28	43.6	12.2	8.1	15.2	19.8
B&B-4	29	95.0	26.7	5.3	74.4	50.4
McNair 511	30	4.4	0.0	1.3	10.7	4.1
B&B-5	31	77.6	6.6	8.7	79.0	43.0
B&B-6	32	4.8	15.6	10.2	24.8	28.4
B&B-7	33	4.2	5.3	11.1	0.0	5.2
B&B-8	34	19.1	0.0	4.8	25.7	12.4
Rowden	35	43.9	23.8	66.3	32.0	41.5
B&B-9	36	22.5	0.0	2.4	17.6	10.6
B&B-10	37	8.2	0.0	0.0	15.6	6.0

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
A. L. Germany, Bobshaw Pedigreed Seed Co., Stoneville, MS						
Dixie King-1	38	21.8	17.5	9.9	3.1	13.1
Dixie King-2	39	10.8	2.5	0.0	10.2	5.9
McNair 511	40	16.1	1.9	0.0	27.9	11.5
Dixie King-3	41	22.8	29.2	0.9	7.2	15.0
Dixie King-4	42	15.9	25.0	5.8	18.1	15.6
Dixie King-5	43	12.2	18.4	9.3	---	13.3
Dixie King-6	44	14.3	1.4	0.0	---	8.2
Rowden	45	77.1	96.1	98.8	93.9	91.5
Dixie King-7	46	29.8	19.2	14.2	6.7	17.5
Dixie King-8	47	12.4	0.0	2.4	---	4.9
Dixie King-9	48	28.5	32.2	12.0	82.4	38.8
Dixie King-10	49	8.3	4.0	2.6	25.5	10.1
Luther S. Bird, Texas A&M Univ., College Station, TX						
McNair 511	50	3.0	2.9	5.4	4.3	3.9
TX-SP 21-75C	51	72.7	26.4	4.0	0.0	25.8
TX-CAMD-S-75C	52	26.1	3.0	1.1	18.6	12.2
TX-Blank-75	53	32.0	23.3	1.0	---	18.8
TX-SP37-75C	54	58.5	8.7	28.1	28.0	30.8
Rowden	55	29.4	44.4	60.0	100.0	58.4
TX-CAMD-H-75C	56	18.8	0.0	3.4	---	7.4
TX-CAMD-E-75	57	25.6	13.8	1.5	19.8	15.2
TX-Lewis-75	58	24.0	10.6	6.9	7.4	12.2
TX-MAR-75C	59	33.9	7.8	24.7	4.8	17.8
McNair 511	60	10.9	10.1	2.1	15.8	9.7
TX-GN-75	61	82.0	11.7	10.9	---	34.9
TX-OR-S-75C	62	51.0	16.0	6.7	---	24.6
TX-DOR-S-75	63	30.7	26.4	1.9	45.1	26.0
TX-OR-H-75C	64	6.8	55.5	47.8	54.4	41.1
Rowden	65	84.0	35.7	11.4	50.9	45.5
TX-ORLE-75C	66	100.0	17.9	33.3	27.1	44.6
TX-ORS-13-75C	67	59.8	14.1	0.0	10.8	21.2
TX-ORLew.-75C	68	95.5	7.0	23.3	36.1	40.5
HG-E-12	69	35.8	10.0	22.0	30.3	24.5
McNair 511	70	27.5	0.0	17.6	5.9	12.8
Tamcot SP 37 Ck.	71	36.6	29.2	35.6	20.5	30.5
Tamcot SP 21 Ck.	72	5.6	10.1	0.0	13.4	7.3
C. P. Cargill, McNair Seed Co., Laurinburg, NC						
McNair-1	73	1.6	2.8	0.0	0.0	1.1
McNair-2	74	1.4	46.4	2.6	23.9	18.6
Rowden	75	80.6	73.3	56.9	74.5	71.3
McNair-3	76	35.8	89.9	42.3	50.8	54.7
McNair-4	77	10.7	17.8	18.2	4.3	12.8
McNair-5	78	10.4	4.1	4.7	5.2	6.1
McNair-6	79	37.8	7.5	9.3	8.0	15.6
McNair 511	80	16.4	15.3	0.0	0.0	7.9
McNair-7	81	10.6	4.3	2.7	1.5	4.8
McNair-8	82	18.4	7.1	22.4	0.8	12.2

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
C. P. Cargill, McNair Seed Co., continued						
McNair-9	83	16.5	11.9	0.0	0.0	7.1
McNair-10	84	43.5	2.5	21.3	20.3	21.9
Rowden	85	95.6	44.3	51.6	69.2	65.2
Delbert C. Hess, ACCO Seed, Plainview, TX						
ACCO-1	86	15.8	0.8	3.5	1.0	5.3
ACCO-2	87	43.0	10.0	9.4	21.1	20.9
ACCO-3	88	18.1	21.3	17.5	5.3	15.6
ACCO-4	89	12.5	8.5	2.3	19.4	10.7
McNair 511	90	3.5	3.8	5.0	16.8	7.3
McNair-5	91	30.2	6.6	20.2	0.0	14.2
McNair-6	92	10.9	10.0	12.5	11.0	11.1
McNair-7	93	16.2	0.0	8.3	13.1	9.4
McNair-8	94	8.8	0.0	2.3	2.2	3.3
Rowden	95	73.8	27.8	81.8	86.4	67.4
McNair-9	96	39.7	9.2	5.7	---	18.2
McNair-10	97	6.9	2.6	15.5	1.9	6.7
A. J. Kappelman, Jr., USDA-ARS, Auburn Univ., Auburn, AL						
McNair 511	100	11.8	8.3	5.6	4.7	7.6
74-4370PBC$_2$F$_3$	102	10.3	5.0	9.8	7.0	8.0
6314B-22	103	11.1	18.6	9.1	17.5	14.1
Auburn BR2	104	13.3	0.0	5.1	5.3	5.9
Rowden	105	89.9	12.4	96.2	94.1	73.2
A-72BBROK-5	106	25.6	6.8	0.0	6.0	9.6
6314B-41	107	6.5	4.8	13.5	5.1	7.5
Auburn 73$_S$	108	27.8	6.0	14.9	31.3	20.0
Redleaf	109	81.8	13.3	88.8	20.0	51.0
McNair 511	110	14.5	6.3	11.5	0.0	8.0
A72BBROK-4	111	1.5	0.0	4.3	14.3	5.0
(ABR1 x BR2)$_{F_4}$	114	1.5	12.8	4.9	17.2	9.1
Rowden	115	100.0	50.0	38.6	96.1	71.2
Auburn 56	116	16.3	2.5	4.7	9.5	8.2
A-72BBROK-3	118	11.1	0.0	4.3	0.0	3.8
J. B. Weaver, Jr., Univ. of Georgia, Athens, GA						
Weaver-1	119	16.2	2.2	13.5	7.7	9.9
McNair 511	120	17.6	8.2	0.0	5.8	7.9
Weaver-2	121	4.2	11.8	16.8	0.9	8.4
Weaver-3	122	6.2	19.3	8.0	12.3	11.4
Weaver-4	123	14.1	5.5	17.5	3.0	10.0
Weaver-5	124	16.7	6.6	14.2	22.8	15.1
Rowden	125	100.0	51.4	93.8	74.0	79.8
Weaver-6	126	12.2	10.3	30.6	52.2	27.1
Weaver-7	127	7.1	7.4	2.1	21.0	9.4
Weaver-8	128	4.2	1.8	31.0	14.1	12.8

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
J. B. Weaver, Jr., Univ. of Georgia, Athens, GA, continued						
Weaver-9	129	73.1	8.2	7.4	20.4	27.3
McNair 511	130	15.8	3.7	4.0	1.0	6.1
Weaver-10	131	29.3	8.3	21.7	28.9	22.0
Mike Williams, McNair Seed Co., Plainview, TX						
Williams-1	132	11.9	3.8	0.0	9.9	6.4
Williams-2	133	12.1	23.5	16.5	---	17.4
Williams-3	134	19.8	7.1	24.6	---	17.2
Rowden	135	98.5	71.2	89.5	53.3	78.1
Williams-4	136	14.0	20.8	16.3	10.8	15.5
Williams-5	137	57.1	9.7	6.8	8.7	20.6
Williams-6	138	15.1	2.5	0.0	9.4	6.8
Williams-7	139	26.5	4.9	24.1	5.2	15.2
McNair 511	140	1.6	0.0	8.9	12.5	5.8
Williams-8	141	9.1	9.3	11.2	6.5	9.0
Shelby Baker, Coastal Plains Exp. Sta., Tifton, GA						
Baker-1	142	27.9	20.2	12.1	18.6	19.7
Baker-2	143	17.5	11.4	7.3	4.3	10.1
Baker-3	144	21.6	3.3	1.4	21.2	11.9
Rowden	145	91.3	17.6	58.3	95.9	65.8
Baker-4	146	3.5	8.5	5.6	11.0	7.2
Baker-5	147	38.0	11.0	12.6	---	12.9
Baker-6	148	18.5	2.4	1.0	---	7.3
Baker-7	149	7.7	12.7	1.1	20.0	10.4
McNair 511	150	16.4	13.9	3.0	4.0	9.3
Baker-8	151	12.7	16.3	11.6	23.3	16.0
Baker-9	152	25.0	18.0	11.6	2.0	14.2
Baker-10	153	2.9	6.2	18.4	5.3	8.2
Jerry L. Baker, Pioneer Hi-Bred Int., Vernon, TX						
Pioneer-1	154	37.1	24.3	34.1	3.6	24.8
Rowden	155	97.5	41.4	97.1	47.5	70.9
Pioneer-2	156	44.8	24.4	31.9	---	33.7
Pioneer-3	157	21.8	3.9	22.0	3.3	12.8
Pioneer-4	158	2.0	2.1	18.8	27.1	12.5
Pioneer-5	159	17.8	6.7	6.7	7.5	9.7
McNair 511	160	11.8	12.7	3.1	3.4	7.8
Pioneer-6	161	29.2	24.7	14.0	20.0	22.0
Pioneer-7	162	29.4	35.9	3.1	13.3	20.4
Pioneer-8	163	9.4	12.4	2.6	0.0	6.1
Pioneer-9	164	18.4	9.8	13.6	1.5	10.8
Rowden	165	48.6	36.2	70.4	70.1	56.3
Pioneer-10	166	28.5	0.9	15.3	---	14.9

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
L. M. Verhalen, Okla. State Univ., Stillwater, OK						
Okla-1	167	0.0	0.0	25.0	---	8.3
Okla-2	168	7.8	14.0	18.6	10.9	13.7
Okla-3	169	3.2	0.0	2.4	---	1.9
McNair 511	170	1.5	5.3	0.0	0.0	1.7
Okla-4	171	22.6	1.1	24.4	0.0	12.0
Okla-5	172	6.3	10.4	6.9	3.9	6.9
Okla-6	173	13.0	4.3	10.4	3.4	7.3
Okla-7	174	0.0	23.4	8.5	19.0	12.7
Rowden	175	76.3	73.3	56.1	44.6	62.6
Okla-8	176	48.7	27.6	14.7	---	30.3
Okla-9	177	13.8	0.0	10.9	4.5	7.3
Okla-10	178	30.0	21.9	52.6	21.9	31.6
T. W. Culp, USDA-ARS, Pee Dee Exp. Sta., Florence, SC						
Culp-1	179	21.2	5.5	8.2	3.2	9.5
McNair 511	180	13.6	9.9	7.6	3.3	8.6
Culp-2	181	7.1	10.9	9.8	5.1	8.2
Culp-3	182	18.1	12.9	21.2	13.1	16.3
Culp-4	183	6.2	3.6	0.0	18.2	7.0
Culp-5	184	11.2	16.7	10.2	28.1	16.6
Rowden	185	74.6	18.0	30.0	60.2	45.7
Culp-6	186	6.0	8.8	0.0	3.7	4.6
Culp-7	187	44.1	29.4	11.3	14.3	24.8
Culp-8	188	21.7	0.0	2.0	13.4	9.3
Culp-9	189	2.1	19.8	2.5	70.5	23.7
McNair 511	190	2.2	10.9	6.8	1.8	5.4
Culp-10	191	0.0	15.3	19.0	20.5	13.7
Henry W. Webb, Coker Ped. Seed, Hartsville, SC						
Coker-1	192	28.0	8.9	0.0	5.6	10.6
Coker-2	193	33.8	2.8	8.3	---	15.5
Coker-3	194	16.8	9.9	4.5	---	10.4
Rowden	195	68.3	22.4	50.7	83.3	56.2
Coker-4	196	11.8	7.3	5.3	11.3	8.9
Coker-5	197	6.2	8.9	0.0	20.8	9.0
Coker-6	198	6.3	14.1	0.8	9.7	7.7
Coker-7	199	25.0	36.4	0.0	41.7	25.8
McNair 511	200	9.9	0.0	0.0	7.5	4.4
Coker-8	201	12.9	15.9	3.7	6.9	9.9
Coker-9	202	23.2	5.4	0.0	22.3	12.7
Coker-10	203	2.7	4.0	9.4	6.9	5.8
Jack E. Jones, La. State Univ., Baton Rouge, LA						
Jones-1	204	12.5	10.4	2.5	6.3	7.9
Rowden	205	33.3	71.4	15.3	50.0	42.5
Jones-2	206	6.7	9.7	8.8	9.5	8.7
Jones-3	207	0.0	0.0	10.4	28.2	9.6

Test entry		Percent wilt by replication				
Designation	No.	1	2	3	4	Mean
Jack E. Jones, La. State Univ., Baton Rouge, LA, continued						
Jones-4	208	1.0	2.9	8.8	13.1	6.4
Jones-5	209	0.0	1.1	17.7	8.0	6.7
McNair 511	210	4.2	7.7	0.0	0.0	3.0
Jones-6	211	7.5	16.4	2.5	9.1	8.9
Jones-7	212	69.4	10.5	13.3	5.3	24.6
Jones-8	213	8.2	1.9	0.0	6.6	4.2
Jones-9	214	11.3	2.5	0.0	0.0	3.4
Rowden	215	65.6	35.1	20.0	52.4	43.3
Jones-10	216	9.6	7.0	5.8	---	7.5
W. C. Johnson, Auburn Univ., Auburn, AL						
Hancock	217	44.3	13.9	6.3	58.3	30.7
Deltapine 25	218	0.0	0.0	5.4	2.5	2.0
Stoneville 213	219	20.0	5.2	15.8	24.8	16.4
McNair 511	220	6.4	4.2	7.4	8.0	6.5
Coker 310	221	8.2	13.0	9.0	16.0	11.6
PD 9241	222	50.4	8.1	13.4	47.6	29.9
Stoneville 603	223	2.4	10.3	1.3	4.8	4.7
DES 06-020-24	224	7.0	0.0	24.9	0.0	8.0
Rowden	225	75.0	67.2	27.3	90.2	64.9
Delcot 277	226	14.7	8.8	14.6	14.3	13.1
Coker 304	227	10.0	7.6	2.9	13.3	8.4
Coker 417	228	8.2	11.4	0.8	3.6	6.0
Coker 201	229	8.3	3.6	0.0	7.3	4.8
McNair 511	230	22.2	4.9	5.6	5.4	9.5
Coker 1104	231	23.7	5.2	22.1	20.2	17.8
Auburn 56	232	6.2	1.8	0.0	5.7	3.4
Stoneville 731N	233	62.2	16.5	4.4	58.0	35.3
McNair 612	234	13.9	0.9	9.0	6.2	7.5
Rowden	235	60.3	21.7	66.2	69.0	54.3
McNair 220	236	4.0	5.0	7.1	5.3	5.4
Deltapine 16	237	29.3	8.3	6.6	27.1	17.8
Vail-7	238	44.0	8.3	58.0	8.0	29.6
Deltapine 55	239	13.8	9.9	0.0	10.6	8.6
McNair 511	240	16.5	51.0	13.9	8.9	22.6
Deltapine 61	241	41.6	11.3	18.5	5.5	19.2
Dixie King III	242	4.2	7.3	10.2	7.1	7.2
Brycot-4	243	40.0	18.9	52.7	12.0	30.9