ALABAMA COTTON VARIETY REPORT 1975

JANUARY 1976

DEPARTMENT OF AGRONOMY & SOILS
AGRICULTURAL EXPERIMENT STATION
R. DENNIS ROUSE, Director

DEPARTMENTAL SERIES NO. 26
AUBURN UNIVERSITY
AUBURN, ALABAMA

1975 ALABAMA COTTON VARIETY REPORT[1/]

A Report of the Performance of Cotton Varieties Tested at Nine Locations in Alabama During 1975

Wiley C. Johnson[2/]

The Alabama Cotton Variety Test is a continuing evaluation of available cotton varieties from both private companies and state experiment stations. Breeding lines that are likely to be released as varieties are also tested. All tests are conducted on units of the Agricultural Experiment Station by Experiment Station personnel. All phases of culture are as generally recommended by Auburn University to farmers. Every effort is made to test the varieties and present the data in an unbiased manner.

Experimental Design and Plot Size

A randomized block design in four replications was used at each of nine locations. Length of plots at different locations varied from 34 to 142 feet. All plots were single row.

Seasonal Conditions

Generally, weather conditions were satisfactory for successful establishment; however, it was necessary to replant skips at the Tennessee Valley Substation, Belle Mina, and at the Wiregrass Substation, Headland. The entire growing season was exceptionally wet throughout the state and cool in northern Alabama. Cotton in all tests was more vegetative than normal, slow in fruiting and maturing, and in northern Alabama had numerous near-mature bolls killed by the first freeze.

[1/] January 1976

[2/] Professor, Department of Agronomy and Soils

Frequent rains and excessive vegetative growth made insect control difficult and not completely effective. Data from the tests at Auburn and at the Sand Mountain Substation, Crossville, are not included in this report because of atypically low yields (average of 102 pounds lint) and extreme variation within the tests.

Explanation of Data

Yield of Seed Cotton: Tests at Prattville, Tallassee, Belle Mina, Brewton, and Monroeville were harvested by a mechanical spindle picker. Tests at Winfield and Headland were harvested by hand. Average weight of seed cotton per acre was determined by each variety at each location.

Lint Percentage: A sample of seed cotton from each variety at each location was taken at harvest and ginned on a 10-saw gin. Lint percentage was calculated by dividing weight of lint by weight of seed cotton.

Yield of Lint: Lint yield was determined by multiplying the lint percentage by yield of seed cotton.

Fiber Properties: Measurements of fiber properties are not available at this time. A supplement to this report will be made when this information is available.

Earliness: Where more than one harvest was made, earliness is reported as the percentage of the total yield harvested at the first picking.

Fusarium Wilt: Reaction of varieties to Fusarium wilt was evaluated at the Plant Breeding Unit, Tallassee, by growing the varieties in fields with a high natural incidence of Fusarium wilt. Results of these tests vary from year to year and also from different areas of the field in the same year. Therefore, several years' data are necessary to realistically characterize

a variety's wilt reaction. These data are summarized in Table 7. Auburn 56 is the only variety tested each year that has been highly resistant.

Stoneville 213 and Hancock have consistently shown a large incidence of wilt. All other varieties that have been tested for at least 3 years have some tolerance to Fusarium wilt. Judgment of resistance should be made on as many years' data as available.

New and Experimental Varieties

Coker 304 (previously tested as Coker 8304) is similar to Coker 310 but somewhat earlier to mature. Seed will not be generally available until 1977. Deltapine 55 is a new variety that has been evaluated in previous reports as Deltapine 652 and Deltapine 652-679-72. It is similar in performance to Deltapine 16 but slightly earlier in maturity. Seed will be in short supply for 1976 but should be generally available in 1977. Coker 1104, Coker 530, Deltapine 67101-11, Deltapine 6829, McNair 3033, Stoneville 106, Stoneville 504, and Stoneville 6049 are breeding lines included in the variety tests for evaluation and are not released varieties.

Statistical Analysis

Appropriate analyses of the yield data were made. For each location, the variability of the test was calculated and is expressed as a percentage of the test mean, coefficient of variation (C.V.). Also, an indication of the difference between variety means necessary to be a real difference is given, Least Significant Difference ($L.S.D._{.05}$).

Acknowledgment

I wish to express my appreciation to Dr. A. J. Kappelman, Jr., for Fusarium wilt ratings, to superintendents J. K. Boseck, J. T. Eason, Robert Moore, J. G. Starling, F. T. Glaze, Emmett Carden, and J. W. Langford for growing and harvesting the variety tests, and to Research Data Analysis for assistance in summarizing the data.

Table 1. Performance of Cotton Varieties in Northern Alabama, 1975

Variety	Yield of lint per acre			Lint percentage		
	Belle Mina	Winfield	Av.	Belle Mina	Winfield	Av.
	Lb.	Lb.	Lb.	Pct.	Pct.	Pct.
Deltapine 67101-11	914	440	677	41	40	41
Deltapine 55	809	485	647	44	44	44
Deltapine 6829	732	536	634	40	41	41
Delcot 277	682	500	591	38	41	40
Coker 304	629	543	586	42	44	43
Coker 1104	624	525	575	40	42	41
Deltapine 45A	614	515	565	41	42	42
Coker 310	675	453	564	41	43	42
Hancock	692	434	563	40	41	41
Deltapine 16	599	504	552	40	42	41
McNair 612	512	577	545	41	44	43
Stoneville 213	543	542	543	40	41	41
Dixie King III	571	506	539	40	42	41
Stoneville 603	639	430	535	38	40	39
Deltapine 25	549	517	533	42	42	42
Coker 417	595	470	533	40	41	41
Stoneville 106	670	389]	530	34	40	37
McNair 3033	578	477	528	40	41	41
McNair 210	595	459	527	36	39	38
Auburn 56	558	447	503	37	39	38
Coker 201	492	508	500	40	44	42
Empire WR-61	536	414	475	38	39	39
Stoneville 504	525	391	458	40	41	41
McNair 511	382	394	388	38	39	39
(The following variety was not tested at both locations)						
Stoneville 6049	652			39		
L.S.D. .05	115	123				
C.V. %	13.3	18.6				

Table 2. Performance of Cotton Varieties in Northern Alabama, Two-year Average, 1974-75

Variety	Yield of lint per acre				Average lint percentage
	Belle Mina	Crossville*	Winfield	Av.	
	Lb.	Lb.	Lb.	Lb.	Pct.
Delcot 277	758	639	511	635	39
Hancock	728	573	457	588	40
Deltapine 55	803	329	492	534	43
Coker 1104	662	564	481	570	40
Coker 304	621	514	513	556	43
Coker 201	584	499	502	534	41
Deltapine 16	626	507	451	532	40
Deltapine 45A	595	444	499	526	40
McNair 210	608	506	444	522	38
Stoneville 213	602	417	465	510	40
McNair 612	492	529	516	509	42
Dixie King III	549	433	490	502	41
Coker 310	599	468	422	502	41
Coker 417	619	383	441	500	40
Auburn 56	530	433	468	485	38
Stoneville 603	569	418	413	476	39
Deltapine 25	498	394	437	452	41
McNair 511	373	617	417	439	40

* 1974 data only

Table 3. Performance of Cotton Varieties in Northern Alabama, Three-year Average, 1973-1975

Variety	Yield of lint per acre				Average lint percentage
	Belle Mina	Crossville*	Winfield	Av.	
	Lb.	Lb.	Lb.	Lb.	Pct.
Delcot 277	771	509	503	605	40
Hancock	721	540	499	592	42
Deltapine 55	803	317	515	573	43
Coker 304	632	470	514	548	44
Stoneville 603	638	437	480	529	40
Stoneville 213	672	378	468	522	41
Dixie King III	602	474	472	521	41
Deltapine 16	651	432	447	520	41
McNair 612	536	481	506	511	43
Auburn 56	563	440	495	507	39
Coker 201	592	441	463	506	43
McNair 210	596	446	441	501	39
Coker 310	633	435	399	496	43
Deltapine 45A	610	355	456	489	41
Coker 417	590	425	393	475	41
Deltapine 25	558	364	431	462	42
McNair 511	392	471	381	408	40

*1973-1974 data only

Table 4. Performance of Cotton Varieties in Southern Alabama, 1975

Variety	Yield of lint per acre						Earliness*	Lint percentage					
	Brew-ton	Head land	Monroe-ville	Pratt-ville	Tallas-see	Av.		Brew-ton	Head-land	Monroe-ville	Pratt-ville	Tallas-see	Av.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Hancock	683	579	549	819	568	640	75	40	41	40	43	45	42
Deltapine 16	591	437	581	875	639	625	71	40	40	41	43	47	42
Coker 1104	700	490	559	825	503	615	73	41	41	40	43	43	42
Deltapine 55	668	619	601	834	355	615	80	42	41	41	43	46	43
Deltapine 25	687	606	523	807	420	609	66	41	42	40	42	44	42
Dixie King III	646	489	596	810	469	602	71	40	41	40	43	43	41
Coker 201	625	614	498	766	497	600	70	41	44	42	43	44	43
Stoneville 213	699	538	520	749	475	596	75	40	42	38	42	44	41
Empire WR-61	604	566	529	810	470	596	71	38	39	37	43	41	40
McNair 210	655	450	523	744	523	579	77	37	38	38	40	37	38
Stoneville 603	537	475	594	771	499	575	74	38	41	39	39	42	40
Deltapine 45A	620	310	571	746	623	574	79	39	39	40	40	45	41
Coker 310	657	546	468	731	440	568	74	42	42	42	40	46	42
Coker 530	695	428	532	760	420	567	77	42	42	42	43	45	43
McNair 511	660	267	505	807	578	563	54	38	41	41	42	42	41
Delcot 277	629	424	524	741	492	562	81	40	39	40	43	45	41
Auburn 56	708	437	485	702	477	562	62	38	38	38	38	39	38
McNair 612	683	335	504	797	487	561	75	44	44	44	46	43	44
Coker 304	724	485	557	644	386	559	84	43	42	43	39	42	42
Coker 417	665	430	505	729	439	554	72	41	39	41	45	42	42
McNair 3033	560	404	441	709	359	495	79	42	42	40	46	45	43
(The following varieties were not tested at all locations)													
Deltapine 6829	762			919	600		73	40			43	44	
Stoneville 504	572			794	399		74	38			39	42	
Deltapine 67101-11				912	521		77				42	43	
Stoneville 6049	736				621		--	40				43	
Stoneville 106	597				557		--	38				44	
L.S.D. .05	97	188	73	91	185								
C.V. %	10.5	28.4	9.7	11.2	26.4								

*Prattville location only.

Table 5. Performance of Cotton Varieties in Southern Alabama, Two-year Average, 1974-75

Variety	Yield of lint per acre							Av. lint percentage
	Auburn*	Brewton	Headland	Monroeville	Prattville	Tallassee	Av.	
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.
Hancock	---	1,147	649	621	935	527	776	42
Deltapine 25	633	1,082	685	613	1,005	557	774	42
McNair 511	669	1,200	528	543	996	645	772	41
Coker 201	636	967	876	591	924	518	762	43
Dixie King III	663	1,093	616	677	961	499	759	41
Delcot 277	629	1,038	575	608	948	648	751	41
Stoneville 213	652	1,028	655	570	945	594	749	41
Coker 1104	595	1,006	649	626	952	574	746	42
Coker 310	649	1,007	731	565	959	512	745	43
Deltapine 16	614	945	575	632	986	648	744	42
McNair 612	639	1,012	644	567	961	547	736	44
Coker 417	671	1,046	628	582	951	486	732	42
Deltapine 55	539	923	729	602	969	492	724	43
McNair 210	699	937	649	546	880	569	715	38
Deltapine 45A	612	998	604	584	903	518	711	41
Auburn 56	612	974	687	527	831	571	708	38
Stoneville 603	616	882	595	580	915	535	693	40

*1974 data only

Table 6. Performance of Cotton Varieties in Southern Alabama, Three-year Average, 1973-75

Variety	Yield of lint per acre							Av. lint percentage
	Auburn*	Brewton	Headland	Monroeville	Prattville	Tallassee	Av.	
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Pct.
Deltapine 25	730	1,005	719	694	959	656	798	43
McNair 511	674	1,138	579	648	921	757	793	41
Hancock	---	1,057	679	703	911	601	790	37
Coker 201	662	944	821	693	885	563	767	43
Stoneville 213	752	941	658	645	915	685	767	42
Dixie King III	664	1,008	625	699	926	616	762	41
Deltapine 16	694	869	590	710	909	737	755	42
Coker 310	661	967	708	667	897	596	755	43
McNair 612	677	940	688	660	903	618	752	44
Deltapine 55	672	871	691	710	925	613	751	44
Delcot 277	606	926	573	726	885	725	748	41
Auburn 56	654	953	690	628	812	679	741	39
Deltapine 45A	655	911	653	664	863	624	733	41
Stoneville 603	701	824	625	676	875	685	733	41
Coker 417	651	988	617	646	901	553	730	42
McNair 210	620	868	667	696	829	635	725	39

*1973-1974 data only

Table 7. Percentage of Plants Showing Symptoms of Fusarium Wilt[1/]

Variety	1975	Average wilt percentage							
		2-yr 1974-75	3-yr 1973-75	4-yr 1972-75	5-yr 1971-75	6-yr 1970-75	7-yr 1969-75	8-yr 1968-75	9-yr 1967-75
Auburn 56	23.7	29.4	29.4	24.5	23.2	27.0	24.2	23.3	20.8
Coker 201	52.5	34.6	24.5	22.4	28.3	35.8	36.1	31.6	38.6
Deltapine 16	16.0	19.0	18.3	20.1	27.7	37.1	36.1	35.6	33.7
Deltapine 45A	25.7	24.5	18.8	16.5	27.7	39.3	37.6	36.5	32.8
Stoneville 213	49.7	44.6	55.2	49.2	49.8	57.3	61.2	65.8	63.1
Coker 310	30.5	25.1	32.3	26.7	35.5	29.6	26.8		
Coker 417	24.5	24.6	28.5	28.9	32.9	35.7	38.2		
Stoneville 603	10.2	22.8	20.7	20.7	26.4	28.5	26.7		
Delcot 277	20.2	19.8	20.2	18.0	22.0	29.7			
Deltapine 25	24.0	26.7	28.5	24.7	26.4				
McNair 210	16.2	24.3	30.5	22.7	29.6				
McNair 511	19.3	23.6	25.4	23.4	26.1				
Coker 304	19.2	26.1	30.0	27.4					
Deltapine 652	25.5	28.1	30.0	26.7					
Dixie King III	29.7	19.2	26.8						
Hancock	54.5	48.3	60.2						
McNair 612	21.7	24.6	33.9						
Coker 1104	35.7	25.4							
Coker 530	49.2								
Empire WR-61	47.0								
Deltapine 67101	29.2								
Deltapine 6829	13.7								
McNair 3033	30.2								
Stoneville 106	32.0								
Stoneville 504	46.5								
Stoneville 6049	23.5								

[1/] Data were taken from a field severely infested with the Fusarium wilt fungus and root-knot nematodes, Plant Breeding Unit, Tallassee, Alabama.