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1954 cotton variety and irrigation - tests in the hill sections of Mississippi

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1954 Cotton Variety and Irrigation

Tests in the Hill Sections of Mississippi

MISSISSIPPI STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION

STATE COLLEGE

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VARIETIES COMPARED IN IRRIGATION STUDY

AT STATE COLLEGE

By E. A. KIMBROUGH and J. F. O'KELLY

A test set up to determine if widely grown cotton varieties respond in the same way to irrigation was continued. The twelve varieties used included some of the earliest and latest as well as the longest and shortest now being grown. Acala 4-42; a variety grown under irrigation in California, was included.

The test received 700 pounds 6-8-8 fertilizer to the acre at the time of planting on April 22. Due to frost damage the test was planted over May 17.

There were twelve replications arranged in six pairs. One replication of each pair was selected at random for irrigation. The other replication of each pair received no irrigation. Water was applied as follows using a sprinkler system:

May 25	0.8 inch
August 4	2.4 inch
August 13	2.7 inch
August 20	2.4 inch
	8.3 inches

On this part of the farm rains enabled the plants to make fair growth in June and July. Since the test was planted late,

the plants did not reach their flowering peak until the first half of August. At this time the maximum daytime temperatures were near 100 degrees, sometimes higher. The August applications of water were, therefore, made at the time when the plants needed the water most. A rain of 1.22 inches fell after the irrigation of August 20. It is not possible to assess the effect of this rain on the results. The May 25 application of 0.8 inch was made on the irrigated plots to insure prompt germination. However, a later check on stands indicated that this did not help. Soil moisture at the second planting was evidently sufficient for germination on all plots.

The total cost of water applied was estimated at \$25.15 per acre. This includes labor, depreciation, interest on investment, etc.

The accompanying table shows, in addition to other things, the average gain in pounds of lint cotton and the value of the gain (both seed and lint). These values are for middling grade cotton and the calculations were made as for an ordinary variety test. Similar gains were

Cotton varieties with and without irrigation, State College, 1954.

	Pounds lint per acre			Total acre value, \$			Lint per centage	Staple inches	Bolls per lb. lint	
	Irrigated	Not irrigated	Increase	Irrigated	Not irrigated	Increase	Irrigated	Irrigated	Irrigated	Not irrigated
Acala 4-42	990	730	260	412	303	109	38.7	1 1/16	151	155
Coker Wilt	931	642	289	411	272	139	35.0	1 1/8	207	215
Hi-Bred	920	672	248	359	263	96	40.9	15/16	155	172
Plains	892	699	193	376	286	90	36.4	1 1/16	196	198
Delfos 7343	867	662	205	368	278	90	37.4	1 3/32	214	226
Delfos 9169	856	682	174	377	292	85	35.2	1 1/8	194	202
Deltapine 15	798	663	135	334	271	63	39.8	1 3/32	202	208
Fox	790	615	175	336	256	80	36.6	1 3/32	247	258
Stoneville 2B	790	674	116	336	278	58	35.0	1 1/16	191	194
Empire	758	638	120	321	269	52	36.0	1 1/16	170	173
Bobshaw 1A	754	582	172	319	246	73	35.9	1 1/16	228	227
Wilds	653	552	101	349	293	56	31.5	1 1/4	227	236
Average			182			83			198	205

obtained in 1952. In 1953 rainfall, totaling more than five inches, fell in mid July. As a result the only irrigation was in August and produced no gain.

Insect control was reasonably adequate and was uniform for the entire area.

When the 1952 and 1954 results are considered together there is some indi-

cation that varieties which have the ability to flower over a long period will produce the greatest yields under irrigation provided insect control is adequate. This probably would not be true, however, near the northern limit of cotton production. Early, rapid fruiting types will still be required there.

1954 COTTON VARIETY TESTS IN HILL SECTIONS

By J. F. O'KELLY, BURKE C. MURPHY, B. C. HURT and S. P. CROCKETT

In a season with as little rain as fell in the state during the summer of 1954 it is not possible to evaluate the yielding ability of cotton varieties. All of the better varieties now available to the cotton grower have potential yields well above a bale to the acre and many as much as two to three bales. The results of tests conducted last summer are reported, however, since they show some of the other comparative characteristics of the varieties. It will be worth noting also that even with the extremely low yields it would be difficult to name a farm enterprise for extensive use in these areas which would return more per acre than cotton under such conditions.

For computing values the lint prices used for the various staple lengths were averages for ten weeks of the Memphis marketing season beginning with the last week in August. The value used for seed was \$66.00 a ton. Values used in the averages were based on middling grade. Computations were made at State College. The field plot work and collection of field weights at the branch stations were handled by those in charge of the respective stations.

The test at the Coastal Plain Station, Newton, was planted April 27 with 600 pounds 12-8-8 fertilizer to the acre. It received three applications of toxaphene. This test was on Prentiss soil. The location has a subsurface hard pan which usually retards growth and fruiting in both dry and wet seasons. There were

numerous showers during May, June, and July but many were too light to affect plant growth although they may have aided insect survival.

The test at State College was planted in the latter half of April but due to spotted damage by frost it was planted over May 20. Six hundred pounds of 6-8-8 fertilizer was applied at first planting. Toxaphene for insect control was applied five times. There was no serious buildup of weevils or other insects. The low yields were due largely to the late planting combined with an extreme deficiency in soil moisture.

The Holly Springs test was planted May 10 after an application of 500 pounds 8-8-4 fertilizer on April 23. The crop was sidedressed with 150 pounds ammonium nitrate to the acre June 10. The test was dusted early with toxaphene for thrips control but the weevil infestation did not become great enough to justify the further use of an insecticide.

The Pontotoc Ridge test was planted April 27 and the Flatwoods test May 12. Both tests were fertilized with 400 pounds 12-8-8 fertilizer at planting and were later sidedressed with 30 pounds of nitrogen. These tests received four applications of Toxaphene dust.

The reader should bear in mind that all of the varieties tested are good producers in their areas of adaptation and many of them are quite widely adapted. These include Deltapine 15, Coker Wilt, Stoneville 2B, and Empire. Bobshaw 1A

should be included where a somewhat stronger fiber is wanted. Acala 4-42 performed better than usual, especially in the irrigation test. Growers should be careful in the use of Acala. In a rainy season without adequate insect control it would probably grow to enormous

height and result in the rotting of any lower bolls.

Where fusarium wilt is a problem Coker Wilt, Plains, Empire, and Auburn 56 should be considered. These varieties may not resist all strains of wilt but they are the most resistant varieties available.

Cotton varieties, State College, 1954.

	Pounds lint per acre	Total acre value			Lint percentage	Staple inches	Bolls per lb. lint
		Middling	Strict low middling	Low middling			
Empire	392.7	161.07	154.98	140.85	36.8	1	184
Fox	378.4	154.31	148.45	134.83	37.8	1	251
Delfos 7343	378.3	153.84	147.98	134.36	38.3	1	236
Auburn 56	375.2	154.73	148.92	135.41	35.9	1	237
Hi-Bred	371.6	132.41	128.69	122.19	41.6	13/16	171
Stoneville 5A	370.2	150.89	145.15	131.82	37.9	1	222
Miller	362.2	138.50	133.43	124.38	38.2	29/32	197
Plains	358.6	143.03	138.72	125.46	38.0	31/32	202
Deltapine 15	348.4	137.23	133.05	130.16	40.3	31/32	223
Acala 4-42	345.8	141.39	136.20	124.44	40.3	1 1/32	171
Delfos 9169	340.2	143.97	138.53	127.47	35.8	1 1/16	213
Coker Staple	336.5	141.76	136.71	125.27	35.0	1 1/32	238
Stoneville 2B	333.8	135.00	131.00	118.64	35.7	31/32	205
Louisiana 33	314.2	125.98	122.21	110.58	37.1	31/32	233
Bobshaw 1A	289.6	121.86	117.51	107.67	35.2	1 1/32	255
Coker Wilt	294.6	124.43	116.86	106.26	36.0	1	235

Average results from cotton varieties, State College.

	Pounds lint per acre					Averages				
	1950	1951	1952	1953	1954	Lint	Acres values	Lint percentage	Length inches	Bolls per lb. lint
Deltapine ..	556	523	601	726	348	551	233.45	40.0	1 1/32	193
Delfos 7343	431	532	615	771	378	545	234.16	37.8	1 1/16	202
Fox ..	490	556	565	732	378	544	232.98	37.2	1 1/32	216
Miller ..	465	516	602	776	362	544	226.45	37.5	31/32	175
Plains ..	469	514	640	683	359	533	277.33	37.5	1 1/32	178
Coker Staple	436	485	627	750	336	527	240.39	35.5	1 1/16	206
Hi-Bred ..	336	548	520	758	372	507	195.53	41.2	7/8	154
Empire ..	307	503	568	730	393	500	212.39	36.7	1 1/32	166
Delfos 9169	360	477	668	645	340	498	216.65	35.8	1 1/16	187
Stoneville 2B	347	455	632	718	334	497	211.11	36.6	1 1/32	179
Coker Wilt	411	509	586	621	295	484	210.58	36.4	1 1/16	194
Bobshaw 1A	396	442	556	617	290	460	197.32	36.5	1 1/32	207

Cotton varieties, Holly Springs, 1954.

	Pounds lint per acre	Total acre value			Lint per- centage	Length inches	Bolls per lb. lint
		Middling	Strict low middling	Low middling			
Hi-Bred	376.1	138.62	133.73	125.08	42.0	7/8	184
Miller ..	343.7	136.93	132.80	120.09	38.2	31/32	223
Deltapine 15	332.9	136.81	131.82	120.50	39.3	1 1/32	214
Stoneville 2B	331.8	138.34	133.36	122.08	36.7	1 1/32	219
Plains ..	330.0	132.00	128.04	115.83	37.5	31/32	223
Fox ..	325.4	135.66	130.78	119.72	36.7	1 1/32	276
Stoneville 5A	314.3	127.75	122.87	111.56	38.4	1	241
Auburn 56	308.4	128.58	123.96	113.47	36.7	1 1/32	240
Delfos 7343	303.5	125.74	121.19	110.87	37.8	1 1/32	273
Bobshaw 1A	295.4	124.86	120.13	110.53	36.0	1 1/16	270
Coker Wilt	293.0	124.06	119.37	109.85	35.7	1 1/16	243
Delfos 9169	292.9	124.11	119.42	109.90	35.6	1 1/16	231
Louisiana 33	285.6	118.66	114.37	104.66	37.3	1 1/32	233
Acala 4-42	281.9	116.97	112.46	103.30	39.3	1 1/16	200
Coker Staple	278.8	117.91	113.45	104.39	35.9	1 1/16	247
Empire ..	278.5	115.32	111.14	101.67	37.9	1 1/32	188

Average results from cotton varieties, Holly Springs.

	Pounds lint per acre					Averages				
	1950	1951	1952	1953	1954	Lint	Acre values	Lint per- centage	Length inches	Bolls per lb. lint
Fox ..	572	474	466	488	325	465	200.47	37.4	1	237
Plains ..	593	404	450	495	330	454	192.97	38.3	31 32	199
Hi-Bred ..	426	411	415	597	376	445	171.73	42.1	27/32	167
Delfos 9169 ..	568	456	447	431	293	439	192.18	36.6	1 1/16	203
Coker Wilt ..	573	406	414	444	293	426	184.96	37.2	1 1/32	207
Miller ..	484	408	405	486	344	425	176.93	38.1	15/32	198
Stoneville 2B ..	518	430	460	379	332	424	184.15	37.1	1 1/32	199
Deltapine 15 ..	526	399	452	401	333	422	179.27	40.0	1	206
Empire ..	502	381	456	473	278	418	179.01	38.7	1 1/32	174
Bobshaw 1A ..	534	424	439	375	295	413	178.07	37.2	1	228
Delfos 7343 ..	478	436	409	436	304	413	177.16	38.6	1 1/32	227
Coker Staple ..	566	374	435	394	279	410	179.67	36.5	1 1/16	222

Cotton varieties, Newton, 1954.

	Pounds lint per acre	Total acre value			Lint per- centage	Staple inches	Bolls per lb. lint
		Middling	Strict low middling	Low middling			
Fox ..	269.0	112.22	108.18	99.04	36.6	1 1/32	333
Auburn 56	257.7	106.75	102.75	93.48	35.2	1	305
Stoneville 2B	255.8	104.06	100.99	91.53	34.8	31/32	293
Bobshaw 1A	245.3	100.79	96.99	88.16	36.5	1	321
Coker Wilt	243.2	102.33	98.68	90.42	35.2	1 1/32	288
Stoneville 5A	241.9	98.32	94.57	85.86	38.4	1	297
Delfos 9169	238.5	99.67	96.09	87.98	36.3	1 1/32	297
Hi-Bred ..	227.1	84.50	81.55	76.33	40.2	7/8	248
Deltapine 15	223.7	89.07	86.38	78.11	38.3	31/32	305
Plains ..	223.5	89.83	87.15	78.88	36.7	31/32	293
Acala 4-42	216.2	89.27	86.03	78.68	38.4	1 1/32	230
Miller ..	212.0	85.05	81.34	74.13	36.0	15/16	286
Delfos 7343	206.5	84.50	81.30	73.86	37.2	1	329
Empire ..	194.4	80.22	77.21	70.21	35.8	1	275
Coker Staple	172.0	73.04	70.46	64.61	33.8	1 1/32	371
Louisiana 33	165.3	66.56	64.57	58.46	36.4	31/32	300

Average results from cotton varieties, Newton.

	Pounds lint per acre					Averages				
	1950	1951	1952	1953	1954	Lint	Acre values	Lint percentages	Length inches	Bolls per lb. lint
Bobshaw 1A	556	452	160	261	245	335	144.88	38.4	1	265
Fox	517	341	153	344	269	325	140.94	37.6	1 1/16	273
Hi-Bred	420	466	154	356	227	325	126.87	41.9	27/32	211
Stoneville 2B	518	411	168	269	256	324	142.54	37.2	1 1/32	231
Coker Wilt	510	401	166	297	243	323	141.82	37.2	1 1/32	239
Miller	496	412	151	296	212	313	133.67	37.6	15/16	239
Empire	577	336	164	283	194	311	135.67	38.8	1 1/32	217
Deltapine 15	529	331	137	318	224	308	131.81	40.5	1	248
Plains	518	318	164	276	224	300	130.14	38.0	1	253
Delfos 9169	474	367	155	243	238	295	131.02	37.3	1 1/16	239
Coker Staple	464	372	166	276	172	290	129.38	36.2	1 1/16	285
Delfos 7343	414	377	142	246	206	277	119.93	39.1	1 1/32	267

Flatwoods cotton variety test, 1954.

	Pounds lint per acre	Total acre value			Lint percentage	Staple inches	Bolls per lb. lint
		Middling	Strict low middling	Low middling			
Auburn 56	208.3	84.51	82.01	74.31	35.2	31/32	311
Plains	190.6	76.36	73.02	66.54	36.2	15/16	264
Empire	190.4	75.92	74.01	66.97	37.2	31/32	243
Louisiana 33	184.0	74.05	72.21	65.40	35.7	31/32	315
Miller	182.7	70.97	68.41	63.84	35.7	29/32	289
Stoneville 5A	181.0	69.51	66.98	62.45	37.5	29/32	286
Bobshaw 1A	179.1	72.08	68.95	62.86	35.5	15/16	333
Acala 4-42	171.7	67.36	65.65	59.29	40.1	31/32	222
Delfos 9169	169.9	70.03	67.40	61.28	36.0	1	265
Fox	169.0	69.37	67.35	61.09	33.5	31/32	402
Stoneville 2B	167.3	65.57	63.23	59.04	34.4	29/32	305
Hi-Bred	166.6	62.45	60.29	56.45	38.9	7/8	277
Coker Wilt	154.6	63.33	61.47	55.75	33.8	31/32	327
Delfos 7343	145.6	58.67	57.21	51.83	35.5	31/32	340
Deltapine 15	142.3	56.50	54.01	49.17	37.7	15/16	331
Coker Staple	139.4	58.58	56.42	51.40	33.1	1	373

Average results from Flatwoods cotton variety test.

	Pounds lint per acre			Averages				
	1952	1953	1954	Lint	Acre values	Lint percentage	Length inches	Bolls per lb. lint
Hi-Bred	388	392	167	316	116.14	40.4	27/32	215
Plains	355	352	191	299	121.36	37.1	31/32	222
Empire	324	381	190	298	120.69	38.5	1	190
Miller	308	389	183	293	117.09	36.5	15/32	227
Stoneville 2B	344	364	167	292	119.62	35.6	31/32	238
Fox	346	339	169	285	116.35	35.8	31/32	288
Bobshaw 1A	326	340	179	282	115.96	36.2	1	257
Delfos 9169	300	374	170	281	117.51	36.0	1 1/32	218
Coker Wilt	300	342	155	266	110.06	35.3	1	250
Delfos 7343	298	351	146	265	107.49	37.8	1	261
Deltapine 15	302	344	142	263	106.33	38.7	31/32	260
Coker Staple	288	360	139	262	109.89	35.0	1 1/32	271

Pontotoc Ridge cotton variety test, 1954.

	Pounds lint per acre	Total acre value			Lint per- centage	Staple inches	Bolls per lb. lint
		Middling	Strict low middling	Low middling			
Stoneville 5A	251.3	99.40	96.38	87.08	39.5	31/32	250
Acala 4-42	249.1	100.29	96.43	87.46	40.2	1	207
Hi-Bred	242.6	88.23	85.80	80.95	40.4	27/32	221
Fox	241.1	101.01	97.39	89.19	35.9	1 1/32	310
Delfos 7343	239.9	95.57	92.69	83.81	38.2	31/32	270
Delfos 9169	233.9	96.40	92.78	84.36	36.0	1	245
Stoneville 2B	228.7	92.40	88.40	80.62	34.9	15/16	265
Miller	228.1	87.69	84.50	78.80	37.3	29/32	248
Empire	227.2	90.71	87.99	79.58	38.0	31/32	209
Auburn 56	221.0	88.49	84.62	77.11	36.3	15/16	265
Plains	221.0	88.77	86.12	77.95	36.8	31/32	259
Bobshaw 1A	218.4	88.50	85.88	77.80	35.4	31/32	299
Coker Wilt	203.2	82.49	80.06	72.54	35.1	31/32	262
Coker Staple	199.7	84.93	81.74	75.25	35.0	1 1/16	270
Louisiana 33	181.4	72.99	70.82	64.10	36.5	31/32	281
Deltapine 15	181.0	71.78	69.61	62.92	39.0	31/32	274

Average results from Pontotoc Ridge cotton variety test.

	Pounds lint per acre			Averages				
	1952	1953	1954	Lint	Acre values	Lint per- centage	Length inches	Bolls per lb. lint
Hi-Bred	300	382	243	308	114.06	40.9	7/32	192
Empire	292	375	227	298	119.96	38.3	31/32	180
Fox	292	337	241	290	119.19	36.3	1	263
Delfos 7343	292	337	240	290	117.54	38.1	1	243
Plains	283	355	221	286	115.95	37.0	31/32	220
Bobshaw 1A	284	352	218	285	116.12	36.3	1	249
Miller	280	343	228	284	111.77	36.8	29/32	219
Delfos 9169	269	344	234	282	117.51	35.7	1 1/32	216
Stoneville 2B	260	334	229	274	112.34	35.1	31/32	227
Deltapine 15	312	313	181	269	108.28	38.9	31/32	240
Coker Staple	265	336	200	267	112.71	35.0	1 1/16	242
Coker Wilt	256	318	203	259	106.94	35.1	1	235