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## Report from Holly Springs Branch Experiment Station for 1933

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REPORT FROM

# Holly Springs Branch Experiment Station For 1933

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By

C. T. AMES

Mississippi Agricultural Experiment Station  
State College, Mississippi  
J. R. RICKS, Director



# ANNUAL REPORT OF THE HOLLY SPRINGS BRANCH EXPERIMENT STATION FOR 1933

By  
C. T. AMES

The work of the station was continued in 1933, as far as possible, on problems, the solution of which will improve agriculture in the adjoining area. Enforced economies called for retrenchment in some phases of the work, but many projects were continued and the results from some of them are reported in this publication. Reports will be made on several other tests when they have been continued long enough to be definitely conclusive.

TABLE 1—COTTON VARIETIES—VALLEY LAND—HOLLY SPRINGS—1929-33

Variety	Per Acre			Lint Data	
	Pounds Lint	Total Value	Rank in Value	Percentage	Length
Stoneville 3	637.8	82.14	1	35.6	1
Missdel 4	610.5	79.07	2	33.0	1 3/32
Stoneville 2	602.7	77.71	3	33.2	1 1/32
Half & Half	586.3	63.81	11	40.4	25/32
Cleveland 54	558.4	72.64	4	33.4	15/16
Lone Star 561	524.7	67.95	8	34.5	1
Missdel 1	523.8	70.43	6	32.2	1 3/32
Miller 589	518.9	70.98	5	34.3	31/32
Rowden	513.8	68.02	7	33.2	31/32
Wilson Type	509.7	63.27	12	32.1	7/8
Acala	493.6	65.33	9	32.9	1
Cleveland 884	475.0	57.99	14	33.2	1
Lightning Express	465.8	65.17	10	31.0	1 3/32
Deltatype Webber	424.2	62.76	13	30.8	1 5/32

The valley variety tests were planted on improved brown loam valley land and fertilized with 400-600 lbs. 4-8-4 fertilizer to the acre. Planting date 1933 was May 10.

TABLE 2—COTTON VARIETIES—VALLEY LAND—HOLLY SPRINGS—1933

Variety	Per Acre			Lint Data		Bolls Per Lb.
	Pounds Lint	Total Value	Rank in Value	Percentage	Length	
D. & P. L. 11	663.1	69.85	4	39.8	1	70
D. & P. L. 10	661.0	70.07	3	35.1	31/32	70
Stoneville 2	656.4	70.76	2	34.6	1	66
Rowden 5056	655.3	67.34	9	35.6	29/32	55
Stoneville 5	653.6	68.46	7	37.7	31/32	72
Stoneville 3	639.7	67.15	10	37.2	31/32	69
Acala 1114	634.7	66.93	11	36.2	31/32	64
Stoneville 2A	629.9	67.87	8	34.7	1	66
Delfos 719	625.1	68.89	5	35.7	1 1/32	59
Delfos 531	620.0	71.03	1	34.1	1 3/32	73
Cleveland 54	619.1	64.15	13	34.0	29/32	65
Half & Half	613.0	54.57	23	41.9	3/4	64
Missdel 4	610.6	68.49	6	35.8	1 1/16	72
Stoneville 4	604.2	65.43	12	33.7	1	56
Acala 4067	575.9	60.87	16	35.7	31/32	57
Lone Star 561	572.2	60.46	17	35.8	31/32	58
Rowden 2088	558.3	59.72	18	33.4	31/32	58
Cleveland 884	548.8	58.58	20	33.8	31/32	62
Missdel 1	547.0	62.19	15	33.0	1 1/16	62
Miller 610	544.8	56.64	22	35.2	15/16	54
Missdel 3	523.7	62.73	14	32.5	1 1/8	64
Wilson Type	520.8	52.54	25	32.7	27/32	67
Lightning Express	517.5	59.29	19	31.6	1 1/16	77
Miller 589	499.4	52.24	26	34.0	15/16	56
Deltatype Webber	486.6	58.54	21	32.0	1 1/8	58
Farm Relief	481.8	53.38	24	34.6	1 1/32	58

TABLE 3—COTTON VARIETIES—HILL LAND—HOLLY SPRINGS—1929-33

Variety	Per Acre		Rank in Value	Lint Data	
	Pounds Lint	Total Value		Percent-age	Length
Stoneville 3 .....	524.2	60.98	1	38.5	31/32
Half & Half .....	516.6	49.24	9	44.3	25/32
Missdel 4 .....	479.8	56.59	2	35.9	1 1/16
Stoneville 2 .....	470.3	55.06	3	36.2	1
Cleveland 884 .....	451.8	49.66	7	36.0	31/32
Cleveland 54 .....	435.6	49.21	10	36.1	29/32
Lone Star 561 .....	430.0	50.06	5	37.3	31/32
Wilson Type .....	428.6	46.46	14	35.0	27/32
Missdel 1 .....	417.8	50.85	4	35.0	1 1/16
Acala .....	396.6	47.73	12	35.4	31/32
Lightning Express .....	393.9	49.66	6	33.5	1 1/16
Rowden .....	391.2	48.65	11	35.7	15/16
Miller 589 .....	390.0	49.25	8	37.3	15/16
Deltatype Webber .....	356.0	46.50	13	32.9	1 1/8

The soil used for the hill tests was brown loam table land which had been improved by legume rotations. Planting date 1933 was May 10. The tests were usually fertilized with 400-600 lbs. 4-8-4 fertilizer to the acre.

TABLE 4—COTTON VARIETIES—HILL LAND—HOLLY SPRINGS—1933

Variety	Per Acre		Rank in Value	Lint Data		Bolls Per Lb.
	Pounds Lint	Total Value		Percent-age	Length	
Half & Half .....	519.6	45.82	10	44.3	3/4	72
D. & P. L. 10 .....	491.2	51.56	1	37.2	31/32	85
Delfos 719 .....	476.9	50.86	2	36.8	1	69
Stoneville 3 .....	471.7	49.34	3	38.0	31/32	86
Acala 4067 .....	463.2	47.54	6	37.9	15/16	74
Acala 1114 .....	455.6	46.73	8	38.1	15/16	71
Stoneville 2A .....	446.8	47.74	5	36.4	1	77
Stoneville 4 .....	446.6	48.11	4	34.7	1	65
Miller 589 .....	445.0	45.00	13	36.2	29/32	65
Stoneville 5 .....	439.6	45.79	11	39.0	31/32	86
D. & P. L. 11 .....	431.2	44.50	10	41.5	31/32	84
Stoneville 2 .....	426.7	45.68	12	36.0	1	84
Cleveland 54 .....	423.8	43.53	18	35.7	29/32	78
Missdel 1 .....	421.6	46.76	7	34.4	1 1/32	72
Rowden 2088 .....	420.8	44.53	15	35.5	31/32	61
Cleveland 884 .....	418.1	44.20	17	35.7	31/32	80
Missdel 4 .....	408.1	44.80	14	36.6	1 1/32	88
Delfos 531 .....	407.7	45.96	9	34.7	1 1/16	84
Lone Star 561 .....	401.7	42.23	19	36.9	31/32	70
Rowden 5058 .....	398.3	40.71	22	36.7	29/32	66
Miller 610 .....	397.6	40.98	21	37.0	15/16	70
Wilson Type .....	396.1	39.28	25	35.8	27/32	83
Farm Relief .....	392.7	41.77	20	37.4	1	68
Missdel 3 .....	358.2	40.44	23	34.4	1 3/32	74
Lightning Express .....	357.4	39.77	24	33.7	1 1/32	85
Deltatype Webber .....	300.2	34.57	26	33.0	1 3/32	69

Cotton spacing tests have been conducted every year when possible because of the widespread interest in this subject. Results from eight years work are presented in Table 5. No data are available for 1931 and 1932. The hill tests were planted on improved brown loam table soil and the valley tests were planted on improved brown loam valley soil.

In preparing for these tests cotton on all plots was planted at a heavy rate per acre. At thinning time certain plots were left unthinned. An attempt was made to thin one group of plots to three plants per foot, another group to two plants per foot, a third group to one plant per foot, a fourth group to one plant to each

eighteen inches, and a fifth group to one plant to each two feet. Since in work of this kind it is not possible to obtain any desired spacing exactly, the number of plants actually present at harvest was counted. From these counts the number per foot was computed.

From a study of these spacing results year by year it appears that cotton on hill soils should be spaced two to four plants to the foot. On valley soils one to three plants to the foot should give highest yields. In attempting to decide the spacing to use on any given soil several things should be borne in mind. Cotton plants must have sunlight if they are to fruit well. This should be watched on fertile moist bottom soils. On the other hand closer spacing will be best on soils where the plants do not grow tall and on nearly any soil when the fruiting season is short. Above all, strive for a regular distribution of plants. Unoccupied spaces on the row do not produce cotton.

TABLE 5—EIGHT YEARS OF COTTON SPACING TESTS  
Plants Reported as Number Per Foot and Seed Cotton as Pounds per Acre

1924	1925		1926		1927		1928		1929		1930		1933		Average		
	Yield	Plants	Yield	Plants	Yield	Plants	Yield	Plants	Yield	Plants	Yield	Plants	Yield	Plants	Yield	Yield	
Hill Tests																	
2.85	1077.1	5.07	1707.1	4.60	1677.3	4.02	1029.6	3.12	1090.0	4.50	1140.7	2.59	729.2	4.10	1525.1	3.86	1247.0
2.33	1111.8	2.57	1492.0	2.87	1600.3	2.43	1020.6	2.20	983.1	2.60	1221.0	1.53	738.4	2.07	1504.9	2.33	1209.0
1.55	1089.6	1.98	1569.1	1.90	1537.7	1.75	915.5	1.53	1044.8	2.20	1196.8	1.43	754.3	1.49	1655.9	1.73	1230.5
1.17	1088.6	1.24	1537.4	1.15	1515.0	1.20	904.7	.89	1101.6	1.00	1095.6	.88	733.8	.84	1497.0	1.05	1184.2
.86	1084.0	.76	1405.9	.89	1487.5	.70	823.5	.60	1079.6	.82	1293.0	.65	748.7	.73	1647.1	.75	1196.2
.72	1114.0	.59	1106.5	.59	1470.8	.63	764.0	.53	1061.9	.65	1294.0	.57	830.3	.60	1479.4	.61	1140.1
Valley Tests																	
3.31	2575	5.82	1896	4.59	1499.2	5.03	1238.7	3.12	995.3	4.10	1756.8	3.30	1432.2	6.27	1484	4.44	1653.4
2.04	1657	3.41	1890	3.01	1419.6	2.44	1731.3	1.98	1043.2	2.10	1864.8	1.90	1871.5	2.65	1749	2.44	1659.6
1.77	1604	2.35	1722	2.21	1550.7	1.70	1686.8	1.40	1005.6	1.60	2071.6	1.42	1922.6	1.52	1838	1.75	1675.2
1.12	1514	1.62	1650	1.24	1606.9	.89	1676.5	.81	1025.4	.89	2018.5	.91	1939.1	.96	2035	1.06	1683.2
.95	1516	.82	1524	.97	1243.0	.66	1548.8	.61	1093.0	.85	2223.0	.71	2025.4	.59	2134	.77	1663.4
.75	1348	.67	1392	.50	1219.5	.57	1648.5	.57	1012.2	.60	2234.0	.47	1915.8	.60	2133	.59	1612.9

TABLE 6—CORN VARIETIES—HOLLY SPRINGS

	Bushels Per Acre				Average
	1929	1931	1932	1933	
Hastings Pro. ....	82.4	84.2	30.9	29.9	56.9
Paymaster .....	71.7	62.1	41.7	32.1	51.9
Cocke's Pro., Sta. ....	70.0	67.5	39.0	29.9	51.6
College 47 .....	61.2	60.1	44.6	30.4	49.1
Mosby, Delta .....	63.4	63.7	36.9	30.6	48.7
Mosby, Sta. ....	60.8	62.9	34.8	32.1	47.7
College G4 .....	56.0	67.7	35.3	29.3	47.1
College Y4 .....	64.4	59.9	35.6	26.9	46.7
Laguna .....	53.2	48.7	44.6	30.8	44.3
Golden Dent, R. H. ....	37.8	44.8	34.0	28.6	36.3
Yellow Dent, Ferg. ....	38.6	27.6	30.6	29.8	31.7
Mexican June .....	52.0	44.7	41.4	.....	.....
Jellicorse .....	.....	65.8	31.6	35.7	.....
Jarvis .....	.....	43.4	33.8	28.9	.....
Mosby, Woodruff .....	.....	.....	20.3	28.1	.....
Marchetti Yellow .....	.....	.....	.....	27.6	.....
Cocke's Pro., Wood .....	.....	48.8	32.4	25.4	.....
Golden Pro., Wood .....	.....	.....	34.3	25.1	.....

The 1933 test was planted on improved valley soil on May 10. 200 pounds 4-8-8 fertilizer to the acre was previously applied. A dry period at the critical stage caused the yields to be much lower than usual. Plantings at other dates on other parts of the farm yielded much better.

Planting in other years was usually done in May or early June after the turning of a legume. When a legume was not turned the crop was fertilized much the same as in 1933.

TABLE 7—COTTON FERTILIZER ANALYSIS TEST

Analysis	1933				8-Year Average	
	Pounds of Seed Cotton per Acre		Dollars per Acre		Seed Cotton	Net Gain Per Acre
	Yield	Increase Over No Fertilizer	Value of Increase at 3.5c lb.	Net Gain	Increase Over No Fertilizer	Net Gain Based On 1933 Prices
600 lbs.						
No Fertilizer .....	894.4	.....	.....	.....	.....	.....
4-8-8 .....	1991.5	1096.1	38.36	31.81	762	20.13
4-8-6 .....	1930.2	1033.8	36.18	30.16	669	17.39
4-8-4 .....	1650.3	752.0	26.35	20.85	612	15.92
No fertilizer .....	898.4	.....	.....	.....	.....	.....
4-8-2 .....	1283.7	393.3	13.76	8.79	430	10.06
4-8-0 .....	845.1	-37.3	-1.30	-5.74	264	4.78
8-8-4 .....	1535.6	661.1	23.13	15.23	579	12.38
No fertilizer .....	866.5	.....	.....	.....	.....	.....
6-8-4 .....	1622.3	741.9	25.96	19.26	616	14.85
4-6-4 .....	1548.9	654.5	22.90	17.91	555	14.42
4-4-4 .....	1642.3	733.9	25.68	21.20	584	15.95
No fertilizer .....	922.4	.....	.....	.....	.....	.....
Avg. yield, no fertilizer .....	985.4	.....	.....	.....	860	.....

This test has been conducted on the same plots for nine years on Brown Loam valley land.

The table for 1933: The yields of the various treatments, the increase in yields due to the various treatments, the value of this increase at 3.5c per pound for seed cotton, and the gain in dollars per acre over the cost of fertilizer.

The table also shows the nine year average increase per acre and the gain in dollars per acre of this increase based on 1933 costs and values.

Prices used: Seed cotton, 3.5c per pound; 16% nitrate of soda, \$32.00 per ton; 20% superphosphate, \$17.00 per ton; 50% muriate of potash, \$44.00 per ton; 4-8-4, \$18.33 per ton.

All applications 600 pounds per acre.

**Cotton Fertilizer Test. Rates Per Acre**—This test was conducted on thin loam table land.



Table No. 8 shows the results for 1933. The cotton was planted late, May 31. There was some boll weevil infestation.

Fertilizer used: 6-12-6 at varying rates per acre.

TABLE 8

Fertilizer Pounds per Acre	Pounds seed Cotton per acre		Dollars per Acre	
	Yield	Increase	Value of Increase at 3.5c per lb.	Gain Over Cost of Fertilizer
6-12-6				
No fert.	620.4			
200 lbs.	949.5	329.1	11.52	8.77
300 lbs.	1083.4	463.0	16.21	12.09
400 lbs.	1137.9	517.5	18.11	12.61
500 lbs.	1305.1	684.7	23.96	17.09
600 lbs.	1384.9	764.5	26.76	18.52

**Phosphorus Sources Test**—Table 9 shows the beneficial effect of phosphorus on thin loam table land of North Mississippi.

TABLE 9

Fertilizer Used	Yield seed cotton	Increase over No phosphorus
600 lbs. 6-0-6	762	.....
600 lbs. 6-9-6, phosphorus from superphosphate	1126	364
600 lbs. 6-10-6, phosphorus from basic slag	942	180
600 lbs. 6-0-6 plus 350 lbs. rock phosphate	977	215
600 lbs. 6-0-6 plus 350 lbs. colloidal phosphate	914	152
600 lbs. 6-12-6, phosphorus from superphosphate	1295	533
No fertilizer	609	.....

**Lint Test**—Table No. 10 shows the yield of seed cotton on limed and unlimed plots following three years of soybeans.

Alternate plots were limed in 1929. Soybeans were grown without fertilizer on all plots for three years.

In 1933 cotton was grown on all plots and fertilized with 250 pounds 4-8-6 per acre.

TABLE 10

Treatment 1933	Yield, pounds seed cotton	Increase
Aug. 14 unlimed plots	783	.....
Aug. 14 limed plots	998	215

This increase is attributed to the indirect effect. That is, the increase is to a large extent due to the beneficial effect of lime on the soybeans and the subsequent effect of the soybeans on the cotton.