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Report from Holly Springs Branch Experiment Station for 1925

C. T. Ames

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By C. T. AMES

Soy beans for forage, and planted in corn as a soil building project.

Mississippi Agricultural Experiment Station
A. & M. College, Mississippi
J. R. Ricks, Director

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Holly Springs Branch Experiment Station
1925

The work of the Holly Springs Branch Station has been continually along the line towards the development of successful and progressive agriculture for this section of the State. More work was planned and executed this year than at any time in the history of the Station. The effect of this work can be very plainly seen on the farms of this section, and the crops produced. While the dry summer had much to do with the large cotton crop produced, fertilizers, close spacing, cultural methods, etc., also played a most important part. No doubt a much larger quantity of fertilizer will be used in the future. The effect of the use of fertilizer this year has been very convincing. The weather at planting time in the spring was very dry, and stands were secured with difficulty. The summer was extremely dry, not enough rain to allow grass to grow. The latter part of the fall was very wet causing the destruction of considerable cotton all over the State. The corn and hay crop was greatly reduced by the drought.

The weather conditions almost completely controlled the Boll Weevil this year. Very little damage occurred in North Mississippi even after the rains began in the fall, except on low lands.

Co-operative fertilizer tests were made at Durant. The Station supervised the applying of fertilizers and picking, and the cultivation was under farm management. Two sets of plots composed of 51 plots each were grown here the same as the cooperative tests. One set of these plots was on first class brown loam valley land. The second set was on thin table land near the Station. Cooperative plots were also planted at Sardis and New Albany. Poor stands were secured and errors in picking made it necessary to discard these results.

A small tract of valley land was leased by the Station to be used in increasing seeds of desirable varieties of cotton and corn, and increase our scope in fight against the weevil.

Soil improvement has had our attention at all times. It has long been recognized that a fertile soil is the basis of successful agriculture and a poor soil is a curse to civilization. Almost every acre of land on the farm grows either a summer or winter legume each year. Special attention has been given to cotton spacing, and variety studies have been made on both hill and valley land. Variety studies have been made also with corn, sweet potatoes, soy beans, alfalfa, lespedeza, and vetch. Dairying, and pasture grasses have had their place in the year's work.

Soil Washing—Controlling surface water on the farms of the South is of first importance. It is practicing poor business methods to attempt to build up land by the growing of legumes and the use of

farm manures, without first checking soil washing. After nineteen years' work on soil reclaiming projects on waste land in most instances, we can truthfully say that allowing surface water to go uncontrolled, thus washing away soil fertility, is an unpardonable crime.

Increased production and the growing of a proper diversity of crops, including enough for farm needs, together with proper marketing facilities, are the principal needs of the State.

A normal year we can grow on some of our soil, two bales of cotton per acre. The farm averaged one bale per acre this year including unfertilized plots and unimproved leased lands. Controlling surface water and the growing of legumes, will to a great extent account for this yield.

COTTON

The requirements for growing cotton successfully in the future are: a fertile soil, the judicious use of fertilizer and boll weevil poison, together with proper cultural methods adapted to the several cotton growing sections. We are of the opinion that there is enough information available on growing cotton under boll weevil conditions to warrant the statement that if this information should be put into practice, the South would grow more cotton than ever before in spite of the weevil. Those who have acquired this information have profited. We have never seen the public in more of a receptive mood than at present and we predict great strides in the near future. If the South will feed herself in this undertaking she will make true progress.

Preparation and Cultivation—In the hill section on account of soil washing during winter, we recommend that all the vegetable matter possible be left on the land as a protection and that these lands not be prepared until spring for cotton. Sod land should be turned in the fall or winter and left rough. Valley land may be prepared for cotton during the fall and winter if water is properly controlled on the land, otherwise but little is gained. On rolling land unprotected by terraces and where every row has more fall than it should have, soil washing will be increased by fall plowing. We will give only two ways to prepare and fertilize land for cotton. Where two furrows are turned together, or listed, it is a common practice to apply the fertilizer on this list by hand or with a fertilizer distributor. The middles are then thrown out and the land harrowed just prior to planting. The other method is to prepare the land in rows, open the rows and distribute the fertilizer, covering with a harrow. If possible apply the fertilizer a week or ten days prior to cotton planting, otherwise planting can be done just behind the fertilizer distributor.

Seed Bed—A well prepared seed bed that has been settled by rain is ideal. When the fertilizer can be applied a week or ten days ahead of planting, the frequent rains that usually prevail in the spring will give a firm seed bed. In case of dry weather, use the roller after planting.

Width of Row—For fertile valley land, three and one-half foot rows are sufficient. On thin upland, three foot rows are very satisfactory.

Time of Planting—Cotton planting time in this latitude is usually between April 25th and May 10th. The past two seasons the planting time was earlier than indicated. Plant cotton when the ground is warm enough to cause quick germination.

It appears that the time changes going South from this place at the rate of about twenty miles per day, that is, the planting time one hundred miles south of here on the Columbus and Greenville Railroad is about April 20th or five days earlier. When cotton is planted earlier than date given, nine years out of ten a poor stand is secured and as a result, a second planting is necessary late in May. The past year, earlier planting succeeded better than dates recommended. This is the case about one year out of ten. It is far better to plant medium early and secure a good stand than plant early and get a poor stand. Early planting is necessary and a good stand is essential. Late planting and poor stands are both very unsatisfactory, often causing a failure in the crop. The easiest way to increase a cotton crop from twenty-five to fifty per cent without one cent of additional cost is to get a good stand of cotton.

A Stand of Cotton—On hill land a stand of cotton is from three to four stalks of cotton in bunches per foot, on valley land two to three stalks in bunches per foot. It appears that about the only excuse for thinning cotton at all is to be able to use the hoe freely. Blocking the cotton out, leaving the blocks twelve to fourteen inches apart, is not very far from good spacing. The best results with close spacing of cotton can only be obtained by the use of a properly balanced fertilizer. Cotton seed should be planted very shallow and in medium elevated rows. It is advisable to use about one and one-half bushels of seed per acre. A good practice is to run the planter twice down a row using about three pecks of seed each trip. The first trip will plant the seed a little deeper than the second trip; this method will increase the chances for a stand.

Fertilizers—See recommendations under fertilizer experiments.

Varieties—See recommendations under variety studies.

Cultivation—Cultivation should begin as soon as the plants are established sufficiently not to be injured. Thin or block out as soon as possible and give frequent shallow cultivation.

Early Poisoning—Calcium arsenate applied in the bud of the cotton just as the squares begin to show, if any weevils can be found, or about the time the earliest squares are about half grown will kill the weevil. Either the sweet poison or the dust form will do the work. If labor is plentiful, use a mixture of one pound of calcium arsenate, one gallon of black strap molasses and one gallon of water applied with a mop or otherwise to the bud. If labor is scarce, use calcium arsenate dust from a hand or power machine. A second ap-

plication ten days later should be made if any weevils can be found. From our results, it appears that all of the weevils are out of hibernation and in the field by the time of the second application even on the earliest planted cotton. These two applications will probably control the weevils on thin upland assisted by dry weather. On valley land it may be necessary to continue poisoning. Aft r there is a ten percent infestation, use calcium arsenate dust as recommended by Mr. Coad, or, what is known as the Government Method, which is, make three applications of dust poison about four days apart and after this hold the weevil to about a twenty per cent infestation until the cotton quits growing by additional applications of poison. Our boll weevil circular is available at the office of the Experiment Station, A. & M. College, Mississippi.

TABLE NO. 1 VARIETY COTTON VALLEY LAND TEST, 1925

No.	Variety Used	Total Yield Seed	Lint				Total Value	Rank in
		Cotton Per Acre	Per Cent	Lbs. Per Acre	Length	Value Per Lb.	Per Acre	Money Value
1	Trice, Miss. Sta.	1744.45	29.4	516.87	1 1-16	20.83	132.21	17
2	Trice, Burdette	1851.67	30.6	566.61	1 1-16	20.83	143.72	14
3	Wannamaker Big Boll	1486.25	36.0	535.05	7-8	18.00	115.33	25
4	Cleveland Piedmont	1633.10	32.9	537.29	1	19.33	125.78	20
5	Cleveland Coker	1169.45	35.4	413.98	1	19.33	95.13	26
6	Cleveland 54	1550.12	33.3	516.19	1f	19.75	122.63	23
7	Half and Half	1398.97	41.7	583.37	7-8	18.00	121.32	24
8	Cook 1010	1463.40	39.7	580.95	15-16	18.53	125.30	21
9	Willis	2193.03	33.0	723.70	1 1-16	20.83	180.14	8
10	Miller	2484.79	32.8	815.01	1 1-8	22.50	216.77	1
11	Acala	2076.57	35.2	730.95	1 1-16	20.83	180.17	7
12	Mexican Big Boll	2049.10	34.2	700.79	1 1-16	20.83	172.94	10
13	D. & P. L. No. 4	2063.20	36.1	744.81	1 1-16f	21.25	184.64	6
14	Lone Star 65	2089.21	33.1	691.53	1 1-8f	23.67	191.63	2
15	Salsbury	1544.60	30.8	475.76	1 1-8	22.50	129.43	19
16	Webber Deltatype	1738.38	29.8	518.03	1 5-16	32.00	190.17	3
17	Delfos 631	1862.37	31.1	579.26	1 1-4	28.33	189.76	5
18	Delfos 911	1798.43	31.3	562.91	1 3-16	25.33	158.18	12
19	Delfos 6102	1885.71	31.2	588.34	1 3-16	25.33	174.98	9
20	D. & P. L. No. 5	1591.04	30.8	490.04	1 1-4f	29.67	167.41	11
21	Express Lightning	1544.12	28.8	444.71	1 3-16	25.33	134.64	16
22	Express 432	1407.24	31.7	446.09	1 1-8f	23.67	124.81	22
23	Mahon's Half and Half	1597.11	39.9	637.25	7-8f	18.33	136.01	15
24	Haaga's 68	1862.86	33.6	626.02	1 1-16	20.83	155.14	13
25	D. & P. L. No. 8	1883.04	37.3	702.37	1 1-8f	23.67	189.86	4
26	Haaga's 86	1507.40	31.0	467.29	1 1-8f	23.67	131.41	18

VARIETY TEST WITH COTTON.

These tests were made, one on hill and the other on valley land. Each test was in one row plots repeated four times. The season was extremely dry from early spring until late fall. The latter part of the season was extremely wet. Plantings were made about the middle of April. All land had to be rolled to secure a stand which was

not had until about the middle of May. The hill land test was on brown loam table land of average fertility. The valley land test was on fertile soil.

Tables No. 1 and No. 2 give the results.

TABLE NO. 2 VARIETY COTTON HILL LAND TEST, 1925

No.	Variety Used	Total Yield Seed Cotton Per Acre	Lint				Total Value Per Acre	Rank in Money Value
			Per Cent	Lbs. Per Acre	Length	Value Per Lb.		
1	Trice, Miss. Sta.	1555.97	32.2	501.02	1 1-16	20.83	124.46	8
2	Trice, Burdette	1288.95	31.4	404.73	1 1-16	20.83	101.98	22
3	Wannamaker Big Boll	1186.90	38.1	452.21	7-8	18.00	96.09	25
4	Cleveland Piedmont	1333.69	35.6	374.79	15-16	18.53	83.64	26
5	Cleveland Coker	1265.19	37.1	469.38	15-16	18.53	102.90	21
6	Cleveland 54	1343.48	35.6	478.28	1	19.33	111.75	18
7	Half and Half	1255.40	44.4	557.40	13-16f	17.33	110.56	19
8	Cook's 1010	1312.72	40.4	530.34	7-8f	18.33	112.86	17
9	Willis	1521.02	34.6	526.27	1	19.33	121.62	12
10	Miller	1356.06	34.4	466.48	1 1-16	20.83	113.96	16
11	Acala	1391.01	36.6	479.11	1 1-16	20.83	118.04	14
12	Mexican Big Boll	1330.90	35.4	471.14	1 1-16	20.83	115.33	15
13	D. & P. L. No. 4	1402.19	37.2	521.61	1 1-16f	21.25	128.45	7
14	Lone Star 65	1481.88	35.2	521.62	1 1-8	22.50	136.57	4
15	Salsbury	1459.51	32.4	472.88	1 1-16f	21.25	120.23	13
16	Webber Deltatype	1198.09	30.2	361.82	1 1-4f	29.67	124.08	9
17	Delfos 631	1472.09	32.4	478.56	1 3-16f	26.42	146.31	1
18	Delfos 911	1439.94	32.4	466.54	1 3-16	25.33	137.64	3
19	Delfos 6102	1511.24	32.5	491.15	1 3-16	25.33	144.81	2
20	D. & P. L. No. 5	1213.46	33.5	406.51	1 1-4	28.33	131.30	6
21	Express Lightning	1349.07	30.1	406.07	1 3-16	25.33	121.72	10
22	Express 432	1385.42	33.8	458.27	1 1-8	22.50	121.65	11
23	Mahon's Half and Half	1242.82	41.8	519.49	7-8	18.00	107.98	20
24	Haaga's 68	1207.87	34.5	416.72	1f	19.75	98.12	24
25	D. & P. L. No. 8	1544.79	38.4	593.20	1f	19.75	136.19	5
26	Haaga's 86	1221.85	38.5	470.40	7-8f	18.33	101.25	23

Remarks—The difference between the prices of long staple and short staple cotton in 1923 was very little. In fact, staple cotton was a drag on the market. This caused a swing back to short cotton in 1924; that year there was a difference of about 6 cents per pound in favor of staple cotton. This year, 1925, the difference between the price of short and staple cotton has been about 6 cents in favor of staple cotton. Some of the strong growing medium early varieties came to the front this year. The long growing season no doubt was in their favor.

Conclusion—The five year average in varieties (tables Nos. 3 and 4) should assist in making selections of varities.

Lone Star 65 came first in the valley land test in 1923, the wettest year on record, and came second this year 1925, the driest year on record. This variety should attract more attention. It is a good storm cotton, dwarf, big boll, early variety.

COTTON VARIETY TEST, FIVE YEAR AVERAGE, 1921 TO 1925

There is no doubt that the careful selection of a variety of cotton and the judicious use of the proper fertilizer will add to the income of the growers more than anything else under their control.

The following tables give a five year average of some of the leading varieties of cotton grown at Holly Springs.

TABLE NO. 3 VARIETIES GROWN ON VALLEY LAND

	Pounds of Lint Cotton Per Acre							
Years	Delfos 6102	Lone Star 65	Delfos 631	Webber Delta	Miss. Sta. Trice	Acala	Miller	Cleveland 54
1921	797.1	741.2	683.9	667.3	675.3	717.5	803.3	849.1
1922	269.9	259.9	192.5	112.0	224.6	293.7	249.1	214.4
1923	408.7	460.1	360.1	286.8	408.0	324.0	317.0	420.4
1924	515.6	456.0	443.7	355.2	493.2	420.8	404.2	435.4
1925	588.3	691.5	579.2	518.8	516.8	730.9	815.0	516.2
Average	515.9	521.8	451.9	388.0	463.6	494.7	517.7	487.0
Value	$168.15	$163.53	$158.05	$142.74	$138.10	$138.10	$136.39	$124.89
Length	1 3-16	1 1-8	1 1-4	1 1-4f	1 1-16	1 1-16	1 1-16	1
Percent	31.1	32.5	30.9	29.4	30.6	35.1	32.3	33.7

Additions:- (9) Half and half 534.8 average lint, $122.75 Value, 41.1%
(10) Pied. Cleveland 472.6 average lint, 118.50 Value, 33.2%
(11) Cook 468.1 average lint, 108.64 Value, 37.3%
(12) Cleveland Wan. 461.8 average lint, 107.86 Value, 35.7%

TABLE NO. 4 COTTON VARIETIES GROWN ON HILL LAND

	Pounds of Lint Cotton per acre								
Years	Delfos 631	Delfos 6102	Lone Star 65	Acala	Miss. Sta. Trice	Webber Delta	Cook	Half & Half	Miller
1921	488.5	491.8	468.0	479.7	437.6	491.8	680.3	612.3	493.4
1922	220.3	226.9	225.3	233.9	255.4	132.6	230.1	287.4	221.7
1923	241.6	230.9	299.4	261.3	256.2	155.7	252.5	240.7	202.5
1924	346.3	364.9	332.2	417.3	355.2	266.7	396.1	414.7	408.7
1925	478.6	491.2	521.6	479.1	501.0	361.8	530.3	557.4	466.5
Average	355.1	361.1	369.3	378.9	361.1	281.9	417.9	422.5	358.5
Av. Value	117.30	113.97	107.07	104.99	103.99	98.59	97.04	95.79	92.88
Av. Percent	32.7	32.8	33.9	36.9	32.1	31.2	38.9	41.8	34.5

Additions:- (10) Cleveland Piedmont Av. Pounds 364.7, Value $91.02, Percent 35.
(11) Cleveland 54 Av. Pounds 367.4, Value $90.99, Percent 25.2
(12) Cleveland Wan. Av. Pounds 344.6, Value $78.24, Percent 37.0

Remarks—There are several new varieties of promise that could not be included in these tables.

The long growing hot dry seasons with but few boll weevils, brought to the front this year some of the strong medium early maturing varieties.

Conclusions—Any variety of cotton that will stand near the top in money value for a five year average is a good variety to plant.

It appears that staple varieties can be grown on both hill and valley land if soil is good and the proper fertilizers are used. However, as a rule, it is better to grow short staple varieties of cotton in the hill section or on the thinner lands and staple varieties on valley land. There is but little change in the standings of the varieties whether grown on hill or valley land, as can be seen in the table. Lone Star 65 ranked first in 1923, the wettest year on record and second this year, the driest year on record. This variety should be planted more extensively in the hill section. It is a good storm cotton, dwarf in growth, big boll, early and prolific.

COTTON SPACING TESTS

Soils—For hill test, brown loam table land. For valley test, fertile brown loam.

Plots—Four rows each, for hill test 1-9 acre each. For valley test, 1-12 acre each.

Planted—April 23 and April 21, 1925.

Fertilized—All plots were fertilized at the rate of 500 pounds per acre with the following mixture: 200 pounds acid phosphate, 100 pounds nitrate soda, and 100 pounds kainit.

TABLE NO. 5 HILL SPACING TEST

Plants per foot in drill	Yield of seed cotton per acre
5.07	1707.13
2.57	1492.01
1.98	1569.11
1.24	1537.36
.76	1405.85
.59	1106.54

TABLE NO. 6 VALLEY SPACING TEST

Plants per foot in drill	Yield of seed cotton per acre
5.82	1896.0
3.41	1890.0
2.35	1722.0
1.62	1650.0
.82	1524.0
.67	1392.0

Remarks—The extremely dry season practically without weevils, gave what might be called a normal cotton growing season. An attempt was made to use the following spaces in the row: unthinned, to be left as it came from the planter, three stalks in bunches per foot, two stalks per foot, one stalk per foot, one stalk per 18 inches, and one stalk per 24 inches. The tables give the actual distances used.

COOPERATIVE FERTILIZER TEST

Conducted by the Holly Springs Branch Station in conjunction with County Agents, Chamber of Commerce and good farmers.

Similar plantings were also made on the Station on both valley land and slightly rolling hill land. The plantings made at Sardis and New Albany were spoiled in picking and had to be discarded. The planting at Durant was on the farm of Mr. Claud McClelland and was worked by J. W. Johnson, colored. Mr. R. L. Rigby, and Mr. H. O. Jones, Secretaries of the Chamber of Commerce at Durant, gave very able assistance, Mr. H. O. Jones making the last picking for the Station.

Soil—The test at the Station was on improved valley land that has grown legumes each year for the past 15 years and acid phosphate and nitrogenous fertilizers have been used each year. The hill land test was on unimproved leased land.

TABLE NO. 7 RESULTS OF FERTILIZER TEST CONDUCTED AT HOLLY SPRINGS ON VALLEY LAND—1925

Pounds of material applied to the acre			--	Pounds seed cotton per acre		Dollars per acre		
Acid phos.	Nitrate of soda	Sul. of potash	Formula - -	Yield	Increase	Increase at 7 cts.	Cost of fertilizer	Net gain
No fertilizer				1560.8				
300	150	100	8-4-8	1995.8	435.0	30.45	9.27	21.18
300	150	75	8-4-6	1876.6	315.8	22.11	8.65	13.46
300	150	50	8-4-4	2146.8	586.0	41.02	8.02	33.00
No fertilizer				1560.8				
300	150	25	8-4-2	1798.7	237.9	16.65	7.40	9.25
300	150	none	8-4-0	1730.8	170.0	11.90	6.77	5.13
300	300	50	8-8-4	1921.5	360.7	25.25	12.14	13.11
No fertilizer				1560.8				
300	225	50	8-6-4	2036.2	475.4	33.28	10.08	23.20
225	150	50	6-4-4	2031.6	470.8	32.96	7.36	25.60
150	150	50	4-4-4	1983.8	423.0	29.61	6.70	22.91
No fertilizer				1560.8				
600	300	100	8-4-4	2334.8	774.0	54.18	16.04	38.14
900	450	150	8-4-4	2299.5	738.7	51.71	24.06	27.65
1200	600	200	8-4-4	2044.8	484.0	33.88	32.08	1.80
No fertilizer				1560.8				

Note:—The materials applied to the last three fertilized plots supply approximately as much plant food to the acre as would be supplied by 1200, 1800, and 2400 pounds respectively, of an 8-4-4 mixed fertilizer. All other treatments were based on 600 pounds of mixed fertilizer of the formulas indicated.

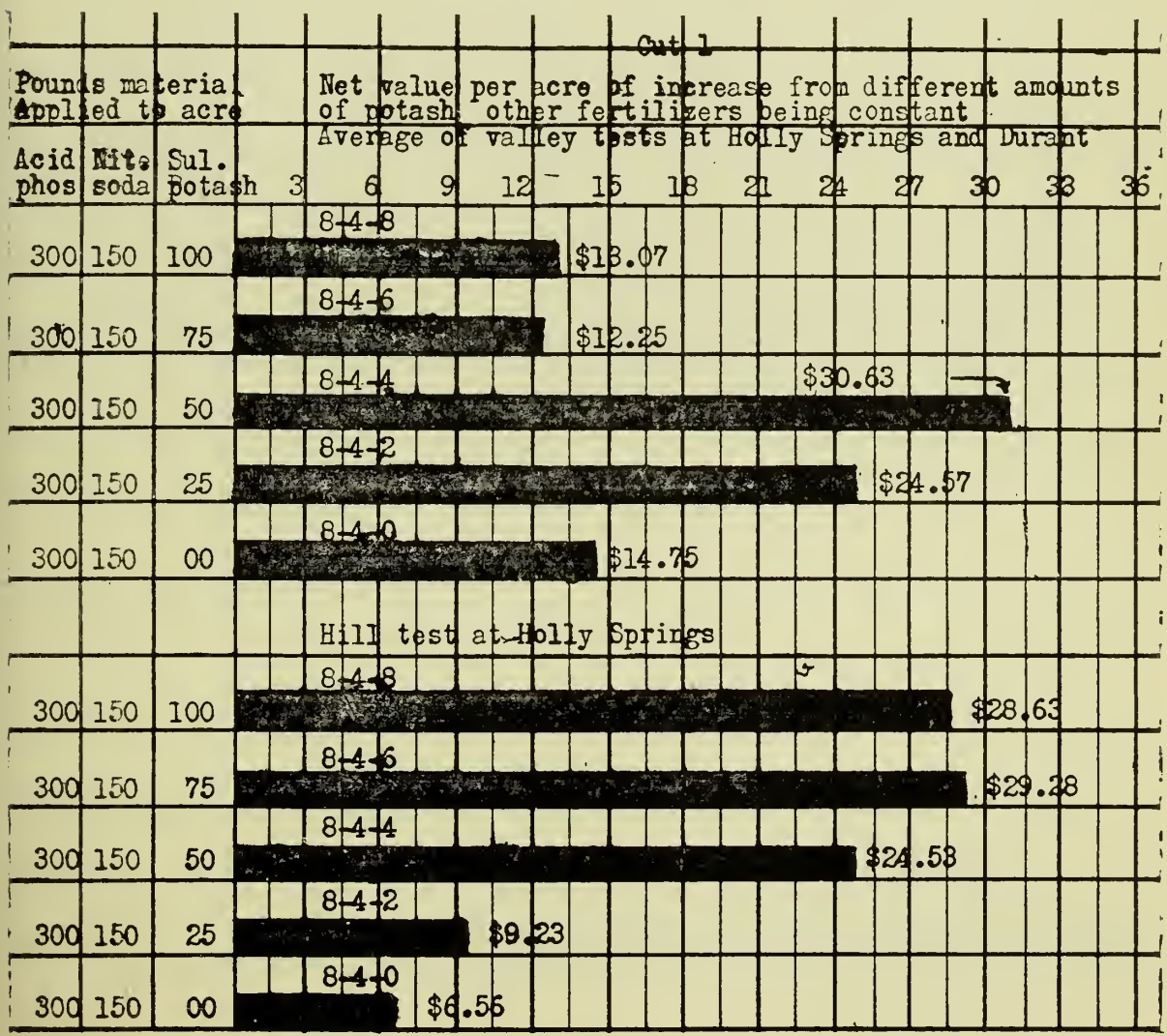
Dates of Planting—Valley land on Station, April 21, 1925; hill land plots, April 18, 1925; at Durant, April 17, 1925.

Varieties—Delfos 6102 was used on all plots except the hill land test; these plots were planted to Mississippi Station Trice.

Plots—All plots were 1-20 of an acre each in size, planted in three series. Only the middle rows were used in the test. The valley land planting did not germinate until after the middle of May.

TABLE NO. 8 RESULTS OF FERTILIZER TEST CONDUCTED AT HOLLY SPRINGS ON HILL LAND—1925

Pounds of material applied to the acre			--	Pounds seed cotton per acre		Dollars per acre		
Acid phos.	Nitrate of soda	Sul. of potash	Formula --	Yield	Increase	Increase at 7 cts.	Cost of fertilizer	Net gain
No fertilizer				679.8				
300	150	100	8-4-8	1221.2	541.4	37.90	9.27	28.63
300	150	75	8-4-6	1221.6	541.8	37.93	8.65	29.28
300	150	50	8-4-4	1144.8	465.0	32.55	8.02	24.53
No fertilizer				679.8				
300	150	24	8-4-2	917.4	237.6	16.63	7.40	9.23
300	150	none	8-4-0	870.2	190.4	13.33	6.77	6.56
300	300	50	8-8-4	972.0	292.2	20.45	12.14	8.31
No fertilizer				679.8				
300	225	50	8-6-4	952.0	272.2	19.05	10.08	8.97
225	150	50	6-4-4	943.3	263.5	18.45	7.36	11.09
150	150	50	4-4-4	961.1	281.3	19.69	6.70	12.99
No fertilizer				679.8				
600	300	100	8-4-4	1302.1	622.3	43.56	16.04	27.52
900	450	150	8-4-4	1480.7	800.9	56.06	24.06	32.00
1200	600	200	8-4-4	1664.9	985.1	68.96	32.08	36.88
No fertilizer				679.8				



The graphs in cut No. 1 represent one year's work only. They show the net value per acre increase from the use of different amounts of potash, other fertilizers remaining constant.

The upper graph gives the average of the test on valley land at Holly Springs and Durant. See table No. 10.

The lower graph gives net value per acre on hill land at Holly Springs. See table No. 8.

TABLE NO. 9 RESULTS OF COOPERATIVE FERTILIZER TEST CONDUCTED AT DURANT—1925

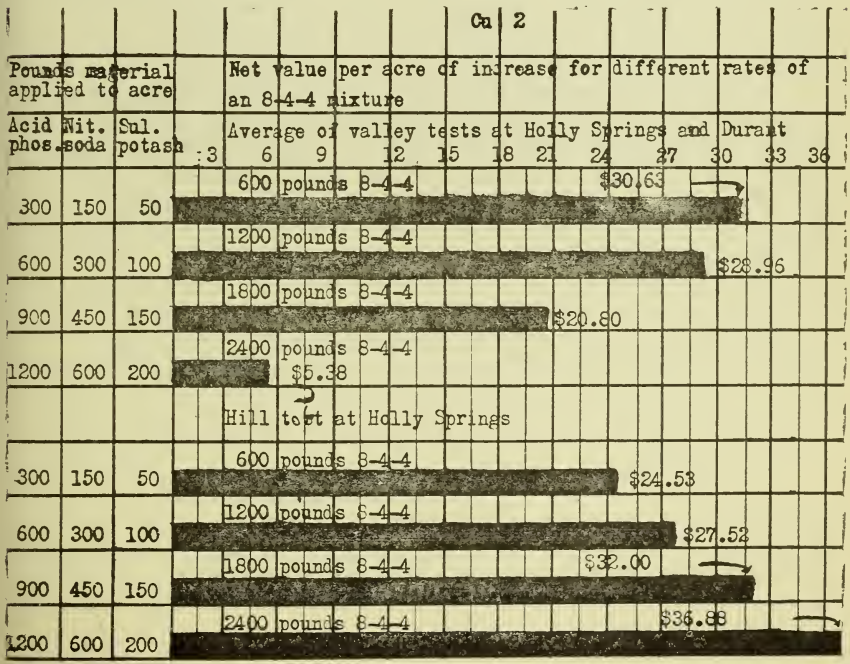
Pounds of material applied to the acre			-- --	Pounds seed cotton per acre		Dollars per acre		
Acid phos.	Nitrate of soda	Sul. of potash	Formula - -	Yield	Increase	Increase at 7 cts.	Cost of fertilizer	Net gain
No fertilizer				1366.0				
300	150	100	8-4-8	1571.9	205.9	14.41	9.27	5.14
300	150	75	8-4-6	1647.3	281.3	19.69	8.65	11.04
300	150	50	8-4-4	1884.6	518.6	36.30	8.02	28.28
No fertilizer				1366.0				
300	150	25	8-4-2	2072.0	706.0	49.42	7.40	42.02
300	150	none	8-4-0	1827.3	461.3	32.29	6.77	25.52
300	300	50	8-8-4	1854.2	488.2	34.17	12.14	22.03
No fertilizer				1366.0				
300	225	50	8-6-4	1959.8	593.8	41.57	10.08	31.49
225	150	50	6-4-4	1913.9	547.9	38.35	7.36	30.99
150	150	50	4-4-4	1880.6	514.6	36.02	6.70	29.32
No fertilizer				1366.0				
600	300	100	8-4-4	1880.5	514.5	36.02	16.04	19.98
900	450	150	8-4-4	1911.7	545.7	38.20	24.06	14.14
1200	600	200	8-4-4	1946.6	580.6	40.64	32.08	8.56
No fertilizer				1366.0				

Note:—The materials applied to the last three fertilized plots supply approximately as much plant food to the acre as would be supplied by 1200, 1800, and 2400 pounds respectively, of an 8-4-4 mixed fertilizer. All other treatments were based on 600 pounds of mixed fertilizer of the formulas indicated.

TABLE NO. 10 AVERAGE RESULTS OF FERTILIZER TESTS CONDUCTED AT HOLLY SPRINGS AND DURANT—1925

Pounds of material applied to the acre			--	Pounds seed cotton per acre		Dollars per acre		
Acid phos.	Nitrate of soda	Sul. of potash	Formula - -	Average	Increase	Increase at 7 cts.	Cost of fertilizer	Net gain
No fertilizer				1463.4				
300	150	100	8-4-8	1782.6	319.2	22.34	9.27	13.07
300	150	75	8-4-6	1761.9	298.5	20.90	8.65	12.25
300	150	50	8-4-4	2015.6	552.2	38.65	8.02	30.63
No fertilizer				1463.4				
300	150	25	8-4-2	1920.1	456.7	31.97	7.40	24.57
300	150	none	8-4-0	1770.8	307.4	21.52	6.77	14.75
300	300	50	8-8-4	1884.1	420.7	29.45	12.14	17.31
No fertilizer				1463.4				
300	225	50	8-6-4	1995.8	532.4	37.27	10.08	27.19
225	150	50	6-4-4	2022.5	559.1	39.14	7.36	31.78
150	150	50	4-4-4	1932.0	468.6	32.80	6.70	26.10
No fertilizer				1463.4				
600	300	100	8-4-4	2106.2	642.8	45.00	16.04	28.96
900	450	150	8-4-4	2104.2	640.8	44.86	24.06	20.80
1200	600	200	8-4-4	1998.6	535.2	37.46	32.08	5.38
No fertilizer				1463.4				

Note:—The materials applied to the last three fertilized plots supply approximately as much plant food to the acre as would be supplied by 1200, 1800, and 2400 pounds respectively, of an 8-4-4 mixed fertilizer. All other treatments were based on 600 pounds of mixed fertilizer of the formulas indicated.



The graphs in cut No. 2 give only one year's results of net value per acre of increase for different rates of an 8-4-4 mixture. The upper graph gives average of valley land at Holly Springs and Durant. (See table No. 10). The lower graph gives results on hill land at Holly Springs. (See table No. 8).

Remarks—We wish to stress the point that the above results shown in the four graphs represent this year's work only.

It appears that potash to some extent has been beneficial in the valley land and Durant tests (table No. 10) but the six and eight percent applications are much out of line.

In the hill land test, table 8, potash appears to be very beneficial even as high as six percent.

In the upper part of Cut 2 giving different rates of 8-4-4 mixture, it appears that as the amount is increased above 600 pounds on the Holly Springs valley and Durant test, the profit decreases. We do not consider this out of line as the valley land used has grown legumes for the past sixteen or seventeen years and has had fair applications of phosphorus each year. Water supply was the limiting factor here. The land at Durant 125 miles south of here, is good level land that has been pastured for the past eight years and did not suffer so much for water.

The hill land test (table No. 8) profits increased as the amount of fertilizer increased. The profit with 1000 pounds of fertilizer was $27.52; with 1500 pounds of fertilizer it was $32.00; with 2000 pounds of fertilizer it was $36.88.

Fertilizer Recommendations—Taking into consideration our past results at the Station and at various points in North Mississippi, we find no marked difference in the fertilizer requirements in this part of the State. The outstanding fact is that both phosphorus and nitrogen are deficient, and we believe potash to some extent, and that a liberal amount of a complete fertilizer will increase the yield of cotton very materially.

The cotton farmer in this section should use a mixture of 200 pounds phosphoric acid and 100 pounds nitrate of soda with 100 pounds of kainit (or 25 pounds sulphate or muriate of potash) where there is a tendency for cotton to rust. This mixture should be applied at the rate of 400 to 600 pounds to the acre. An 8-4-4 ready mixed fertilizer can be used instead of this home mixture provided the greater part or all of the nitrogen is from a readily soluble source.

Results indicate that on the average soil of North Mississippi as much as 1000 pounds of a well balanced fertilizer will pay better than the lesser amounts recommended provided the fertilizer is judiciously used and the crop is well cared for. Results also indicate that where the soil has been materially improved by the use of legumes, and other farm practices excellent yields can be obtained without any enormous investment in expensive fertilizers.

FERTILIZER TEST ON FINLEY FIELD—1925

Soil—Very thin brown loam of somewhat uneven fertility. This land has been in cultivation for fifty or more years without having ever been planted to restorative crops of any kind. This is the fourth year these plots have been used. Results in 1923 and 1924 were so poor that they were not published. This type of land is similar to thousands of acres in this section.

Plots—Were 1-23.84 of an acre each, composed of seven rows and planted in four series. Three series were planted to cotton. Rows were three feet wide.

Planted—April 24 to Cleveland Wannamaker Cotton.

TABLE NO. 12 COTTON FERTILIZER TEST—1925

Pounds of material applied to the acre				Pounds seed cotton per acre		Dollars per acre		
Acid phos.	Nitrate of soda	Cotton S. Meal	Kainit	Average	Increase	Increase at 7 cts. lb.	Cost of fertilizer	Net gain
No fertilizer				656.5				
250	100	200	100	1522.7	981.3	68.69	11.08	57.61
250	100	200	75	1393.9	967.5	67.72	10.92	56.80
250	100	200	50	1180.1	868.8	60.82	10.76	50.06
No fertilizer				196.2				
250	100	200	0	1060.9	855.3	59.87	10.60	49.27
150	100	200	75	945.7	730.7	51.15	10.04	41.11
350	100	200	75	1041.8	817.4	57.22	11.80	45.42
200	100	200	75	934.5	700.7	49.05	10.48	38.57
No fertilizer				243.2				
250	50	200	75	961.5	698.4	48.89	9.56	39.33
250	150	200	75	1339.8	1056.8	73.98	12.28	61.70
250	0	200	75	915.5	612.7	42.89	8.17	34.72
250	100	0	75	1025.1	702.4	49.17	5.42	43.75
No fertilizer				342.6				
300	100	200	100	1393.9	1047.7	73.34	11.52	61.82
300	100	200	75	1322.4	972.6	68.08	11.36	57.72
300	100	200	50	854.2	500.7	35.05	11.20	24.85
300	100	200	0	1137.9	780.8	54.66	11.04	43.62
No fertilizer				360.7				

Note:—The pounds increase in the above table was obtained by subtracting the assumed yield of all treated plots without fertilizer from the actual yield. The assumed yield without fertilizer was obtained by assuming a gradual increase or decrease from one check to the next.

NITROGEN SOURCES TEST

Soil—Unimproved sandy loam valley land.

Plots—Size 1-20 acre each, consisting of four rows each, forty inches wide and 164 feet long. Only the two inside rows were used in the test.

Planted—April 18.

Variety—Mississippi Station Trice.

TABLE NO. 11. NITROGEN SOURCES TEST—1925

Pounds of material applied to the acre	Pounds seed cotton per acre		Percent increase	Dollars increase in value at 7c
	Yield	Increase		
No fertilizer	1742.3			
150 Nitrate soda	1989.4	247.1	14.18	17.30
112.5 Ammonium sulphate	1944.4	202.1	11.60	14.15
88 Ammonium nitrate	1987.2	244.9	14.06	17.14
No fertilizer	1742.3			
105 Calcium cyanamid	1893.4	151.4	8.69	10.60
173 Calcium nitrate	2074.4	332.1	19.06	23.25
48.9 Urea	1960.9	218.6	12.55	15.30
No fertilizer	1742.3			

Note:—All plots including the checks had an addition of 300 pounds acid phosphate and 50 pounds of sulphate of potash per acre in order that deficiencies in these would not render the nitrogen comparisons worthless. Each nitrogen carrier was applied at such a rate as to supply 22.5 pounds available nitrogen per acre.

CORN

All of the corn grown at the Station is after some legume, principally vetch. As a rule, early planting on thin land is advisable. The seasons are more favorable about the time corn begins to fruit than they are when later plantings are made. When plantings are made earlier than the latter part of April, the results are usually a poorer stand. When the soils have an abundance of vegetable matter, earlier plantings can be made with safety. Thin land is a poor place to grow corn. Our method is to turn the land planted to crimson clover about the time blooming begins. Disk the land thoroughly and after a rain, harrow and plant on a level. On land where vetch is grown, after some of the seed have matured, the vetch is removed for hay and the land turned, disked, harrowed, and planted. Usually land in vetch has sufficient moisture in it to permit immediate planting after preparation. The planting should follow very closely to preparation. One good rain after the land is turned to settle down the soil, almost insures a good crop of corn. This work is done usually the first half of June.

We advise planting beans, Otootan, Laredo or Virginia soy beans, in every row of corn. If it is a dry year, the yield of corn will be reduced to some extent, but the two crops are much more valuable than corn alone. It is a good practice to plant two rows of corn and one row of velvet beans. If the same number of stalks are left on

the two rows of corn as would be left if all three rows were planted to corn, the yield will be reduced but little. This method will build up the land and at the same time give larger yields each year from the land. The Laredo or Otootan soy bean will stand more water than corn. Unsafe wet lands can be planted to either of these beans and corn and if the corn is drowned out the beans will make a crop. Much of the wet lands of the country are being planted to one of these varieties of beans for forage. Beans planted in the same row with corn will keep down weeds and grass to some extent and shade the ground during the summer.

Three or four beans dropped every 12 to 15 inches will give satisfactory results. If necessary a planter dropping the beans can be run behind the corn planter in the same row with the corn. If corn is not planted until after danger of frost, the beans will germinate about as well as the corn.

Planting and Cultivating—Corn should be planted very shallow in the spring and on a well prepared seed bed. We prefer wasting seed corn in order to insure a good stand. About seventy-five per cent of the farmers do not put down enough seed to insure a stand of corn. Where a forty-two inch row is used, on average land, one stalk every thirty inches is about the right distance. As land increases or decreases in fertility, the distance should vary. The more fertile the land, the more closely the corn can be grown and the thinner the land, the wider the distance should be. It is easy to leave too much corn in the land for the best results. Thin land should be planted to a legume and not to corn; more feed will be secured by such a method.

Where deep cultivation is practiced it should begin when the plants are small and should be kept up at frequent intervals. This method is more applicable for early plantings. For June planting, medium shallow cultivation is advisable. Four or five cultivations on the later plantings are usually sufficient for good results. Run the cultivator about the same depth at each cultivation, regardless of the method used.

VARIETY CORN TEST

Plots—One row each planted in checks, repeated eight times; rows 3½ feet apart, and 130 feet long.

Date of Planting—May 15, 1925.

Fertilizer Used—Two hundred pounds of acid phosphate and 150 pounds of nitrate of soda, after turning under a good sod of crimson clover. Moisture was the limiting factor this year.

TABLE NO. 13

Variety	Yield in bushels per acre	Percent of Grain	Rank
Mosby Station	59.87	73.6	8
Mosby Delta	63.51	73.6	3
Mosby Lee	58.10	71.6	9
Mosby Suttle	52.82	80.0	12
Cocke's Prolific Station	62.57	73.2	4
Cocke's Prolific Delta Station	60.75	74.2	7
Hastings	73.97	76.7	1
Delta Prolific	61.17	79.4	6
Jelli Course Twins	64.00	69.2	2
Laguna	53.41	68.3	11
Paymaster H. Springs	53.98	69.2	10
Paymaster	62.09	70.6	5
Ellis	50.80	67.2	13
Yellow Dent Fer.	42.13	72.5	16
Yellow Dent Station	44.62	70.7	15
Large Yellow Dent	50.76	67.2	14

Remarks—The soil on which this test was conducted was highly improved and the yield was low on account of dry weather. The variety Jelli Course Twin came out second the past two years. This is a tall growing, medium size, white eared variety. The seed were secured from the Knoxville Tennessee Experiment Station.

VARIETIES OF CORN, FIVE YEAR AVERAGE—1925

Years	Neal's Paymaster	Hasting's Prolific	Mosby College	Cocke's Delta	Cocke's Station	Laguna
1921	43.71		46.55	35.78	39.52	38.44
1922	76.22	53.92	55.56	56.15	54.53	48.63
1923	79.51	72.80	64.73	72.81	72.51	63.62
1924	68.77	43.02	50.35	51.79	56.70	49.93
1925	62.09	73.97	59.87	60.75	62.57	51.20
Average	66.06	60.92	55.61	55.66	57.16	51.20

Remarks—It will be noted that Hasting's Prolific test was for 4 years.

Recommendations—Any of the above varieties are good. Neal's Paymaster has been in the lead at this Station for the past three years until this year. Some objection is found to this variety by some growers. It is a large red cob, two eared variety that is hard to beat. Jelli Course Twin is a new tall growing variety that came second for the past two years and has only been in the test two years. This variety was secured from the Knoxville, Tenn., Experiment Station. This promises to be fine for silage and grain.

CORN FERTILIZER TESTS—1925

Soil—Unimproved sandy loam valley land that has been subject to overflow.

Plots—Size 1-20 acre each duplicated.

Planted—April 15, 1925.

Variety—Neal's Paymaster.

TABLE NO. 15 CORN FERTILIZER TEST—1925

Pounds of material applied to the acre	Bushels per acre		Increase at $1.05	Cost of fertilizer	Net gain
	Yield	Increase			
Check	18.84				
100 Nitrate soda	23.78	4.94	5.19	2.75	2.44
100 Nitrate soda					
200 Acid phosphate	24.22	5.38	5.65	4.51	1.14
Check	18.84				
100 Nit. soda at planting					
100 Nit. soda first working	28.68	9.84	10.33	5.50	4.83
100 Nit. soda					
200 Acid phos. at planting					
100 Nit. soda first working	28.65	9.81	10.30	7.26	3.04
Check	18.84				
200 Acid phos.					
200 Nit. soda	31.38	12.54	13.17	7.26	5.91
Check	18.84				
200 Nit. soda					
400 Acid phos.	30.30	11.46	12.03	9.02	3.01
150 Ammonium suluphate					
400 Acid phos.	25.14	6.30	6.62	8.77	−2.15
Check	18.84				
150 Ammonium sulphate	27.29	9.48	9.95	10.27	−0.32
150 Ammonium sulphate					
400 Acid phos.					
200 Kainit	28.32	8.45	8.87	5.25	3.62
Check	18.84				

Remarks—There was a very marked benefit in the early growth of the corn from the use of a mixture of acid phosphate and nitrogen combined. The lack of moisture was the controlling factor. Ordinarily this land should have given a very much increased yield.

Recommendation—Based on former results, we recommend the use of a mixture of 150 pounds acid phosphate and 100 pounds nitrate of soda or 75 pounds sulphate of ammonia per acre at planting. It will pay in most instances to apply as a side dressing, from 50 to 100 pounds of nitrate of soda, after first working.

Very frequently side dressings of nitrogen are made too late for the best results. On soils that have had liberal applications of acid phosphate for several years prior to planting corn, the additional application of phosphorus may not be necessary. A fertile soil is best for corn. Plant soy beans in your corn and improve the fertility of your soil.

TABLE NO. 14. CORN AND BEAN TEST

	Yield in bushels per acre	
	1923	1925
1. 6 Rows of corn	48.2	45.9
2. 6 Rows of corn with Soy beans	45.5	37.25
3. 6 Rows of corn with Velvet Beans	31.3	31.9
4. 6 Rows; 2 rows corn 1 row soy beans	42.5	37.5
5. 6 Rows; 2 rows corn 1 row velvet beans	40.2	34.2

Remarks—Extreme dry weather prevented a much larger yield.

Conclusions—Plant beans in corn, either in every row or in every third row. The two crops will more than equal corn alone. It is not advisable to plant velvet beans in every row with corn, a wet year (1923) the beans will destroy the corn. A season when rains are plentiful the yield of corn will be reduced but little even if soy beans are planted in the same row with corn. This method will keep up soil fertility besides giving an increased amount of forage and grain.

Silage—Sweet sorghum planted alone or in the same row with corn, gives very satisfactory results. We have found Japanese Seed Ribbon Cane a most excellent variety for this purpose. This sorghum produces at least one third more tonnage per acre on any land than corn and has very near the same feeding value ton for ton. Sorghum has other advantages. Dry seasons, like the past year, sorghum will stand the drouth better, and at harvest time the sorghum will not damage if harvesting is delayed, which is not the case with corn. Corn blooms but once and if the weather is unfavorable during this period, the results will be very poor. Sorghum will wait for rain and will recuperate after the rain. The one thing to be guarded in sorghum, it must be mature to make a good grade of silage. Immature sorghum will make sour silage which is very undesirable. If sorghum is planted with an (small size) eight hole corn plate in the planter, the seed will be dropped in bunches about twelve inches apart and hoeing may not be necessary if cultivation is properly done. Sorghum grown thick in this way will produce smaller stalks which are more desirable for feed.

Fertilizers—When such heavy tonnage is to be removed from the land a liberal amount of fertilizer should be used. Six or eight hundred pounds of an 8-4-4 mixed fertilizer would give good results. If the weather gets very dry, the addition of 100 pounds nitrate of soda as a side dressing would pay. On fertile soil a good season, from fifteen to twenty tons of silage per acre could be expected. The average is about ten tons per acre. Some have found it satisfactory to plant corn with sorghum in the same row. This method was a failure on the Station this year. If a mixed corn and sorghum silage is desired, they can be planted separately and mixed at the cutter. We have been unable to find a substitute for dairy cows that is more profitable.

SWEET POTATOES

Variety and Spacing Test

Soil—Slightly rolling brown loam hill land.

Plots—Duplicated 1-20 acre each.

Variety—Nancy Hall.

Seed Selection and Treatment—Use only clean sound potatoes free from diseases. Potatoes grown from vine cuttings on land free from diseases give desirable potatoes for growing plants. Sound potatoes taken from among black rot infested potatoes can be used for seed if soaked 10 minutes in a solution composed of one ounce of of bicholride of mercury to eight gallons of water. All seed potatoes should have this treatment, it matters not how clean they appear.

Beds—Convenience for watering should have much to do with the location, also the beds should be on land where no potatoes have been grown for the past five years. If it becomes necessary to use the same beds each year, the soil should be removed and all parts of the beds disinfected with a solution of copper sulphate, one pound to twenty gallons of water. A wooden vessel should be used in making the solution.

TABLE NO. 16 SWEET POTATO VARIETY TEST

Variety Used	Average Yield in Bushels					
	1921	1922	1923	1924	1925	Five Year
Nancy Hall	198.7	150.4	142.9	217.3	225.7	187.0
Triumph	271.8	178.8	195.2	224.5	230.3	209.3
Porto Rican Yam	278.8	191.4	133.3	135.2	250.4	197.8
Dooley Yam	200.2	125.1	177.1	178.6	294.1	195.0

TABLE NO. 17 SWEET POTATO SPACING TEST

Space used	Average Yield in Bushels		
	1923	1925	Two Year
7 Inches in drill	206.2	186.6	196.4
14 Inches in drill	170.9	167.2	169.0
21 Inches in drill	154.5	151.8	153.1

The only satisfactory way we have found for growing plants is in hot beds, the heat supplied by stable manure or artificially. If stable manure is used the method we employ is to dig a pit about twelve inches deep and five feet wide and as long as desired. Green moist stable manure is placed in piles in the pit and allowed to remain until hot; the time required being about two days. After heating, the manure is spread evenly over the bottom of the pit about twelve inches deep and well packed by tramping. Cover the manure at once with about six inches of top soil. If the soil is dry it can be packed firmly. The potatoes are then placed close together without touching and covered about 2 1-2 inches deep with sand or woods dirt. A hot bed of this kind should not be made until ready to use. If covered with glass or canvas, better results will be had, as the bed can be protected from cold rains. This type of hotbed is common over the country. Bottom heat may be supplied from a furnace or some other method.

A common method is to dig a trench about ten inches wide and twelve inches deep in the middle of the bed. This trench should have a rise of not less than one foot to twenty five feet in length. The lower end of the trench is widened out and deepened to be used as a furnace. Old tin or sheet iron is placed over the trench the entire length and six inches of soil is put on the sheet iron. The potatoes are bedded as described above. A chimney is made of one by twelve inch plank about eight feet long. The furnace is heated when desired. The advantage of this kind of heat is that it can be supplied only when necessary.

Soil for Planting—A clay or sandy loam is fine for potatoes. Most of the Station potatoes are grown after vetch is harvested from the land. Potatoes can be grown on thin soil but a much larger yield can be grown from the better type of land. Rows may be three or three and one half feet apart and plants about 14 to 16 inches apart in the row. Use about five hundred pounds of 8-4-4 mixed fertilizer or the same amount of the following mixture. 200 lbs. acid phosphate, 100 lbs. nitrate soda and 100 lbs. kainit or its equivalent in some other form of potash. The past year only early plantings were satisfactory. Usually the planting made about June 1st. is very satisfactory.

Harvesting Potatoes—Remove the vines with a hay rake or, a vine cutter may be used. In case of killing frost before digging, the vines should be removed within two or three days.

Two furrows with a double horse plow does good work in the absence of a potato digger. The greatest care should be used to prevent bruising. The potatoes should be assorted in the field and placed in baskets or boxes. This will facilitate handling and curing out in the curing house. It is through bruised or cut potatoes that diseases such as ring rot, storage rot, and other diseases are introduced. Such potatoes should be disposed of as soon as dug or stored separately.

Curing the Potatoes—Get rid of excessive water in the potato. This should be done as soon as dug. The curing house is a proper place for such work. If the weather is dry, open all ventilators, doors, and windows and allow air to circulate during the day and close up at night. Keep fires going in furnace or stove during the day. It usually requires about two weeks to dry out a small house. The thermometer should range around 80 degrees during the day to get the best results in curing the potatoes. Properly cured potatoes will stand four or five degrees below freezing without great damage, which is an item in marketing. The proper temperature for keeping a house during the winter is between 45 and 55 degrees; slight variations will not injure the potatoes.

The sweet potato could easily be one of North Mississippi's money crops. There is a good demand on nearby markets.

VETCH

Every land owner should be interested in maintaining soil fertility. The most practical way, after the surface water has been controlled, is to grow either summer or winter legumes. Any of the following legumes are fine: red clover, bur or crimson clover, velvet or soy beans, cow peas, lespedeza or vetch. Take your choice, but grow a legume on your soil every year if you can. It is profitable both to the producer and to the soil. More profitable crops are grown following the legumes without any additional cost. Most legumes can be grown as catch crops and in most instances cost but little more than the seeding. The hope of the South is increased production with less cost, and on less acres of land. This will in most instances necessitate increased soil fertility. The legume that produces well and is easily grown should be considered. Vetch is easily started on good land and if properly handled (allowed to seed once in two or three years) will remain indefinitely on the land and come up as a volunteer crop each fall after the cultivation of ordinary crops has ended. Vetch grows some in the fall but it makes its principal growth in March, April and early May. Hairy vetch has so far given best results at this Station, although smooth or common vetch does well and is about ten days earlier than the hairy vetch. Vetch is not unlike other plants; it does best on good fertile soil. Vetch does not do well a wet season or on wet land. Land on which barnyard manure has been scattered gives fine results. Use about ½ pound of soil from land growing vetch successfully, to each pound of seed, to furnish inoculation. If let alone vetch will mature seed about the latter part of May. The first crop should be turned under after seeding to secure a good quantity of seed for future crops. After the first year a hay crop can be removed after some of the seed have matured.

We have found the following two year rotation a most excellent method: Plant vetch seed, fifteen pounds per acre, in cotton middles in September and cover by using a cultivator of some kind. When fall rains begin the vetch will germinate and do some growing during the winter. Allow this to mature seed, turn the land and plant to corn, which will be in June. Plant the next year to cotton and allow the vetch to mature seed, follow with corn, etc. Land treated in this way will increase in production each year. A small addition of about two tons of limestone per acre will double the yield of vetch. The manure secured from stock fed to vetch hay if scattered on the land will give a most excellent seeding of vetch. This is one of the easiest ways to increase the area on the farm. We cultivated land this year that was seeded to vetch sixteen or seventeen years ago and now has a most excellent stand. Only one seeding has been made. This land will now make two bales of cotton and one hundred bushels of corn a good year for these crops. It is necessary to keep up the supply of phosphorous and potash to get the best results following vetch.

LESPEDEZA

Every effort in experimental work with lespedeza for the past two years has been practically destroyed by the extreme dry summers, fertilizer experiments and varied quantities of seed planted per acre, etc. In our reclaiming work on extremely poor soils, we found this plant the most satisfactory. It adapts itself to the soil on which it is planted from the poorest to the richest, but it is like other plants,—it does best on fertile soils. The addition of phosphorus at the rate of 500 lbs. of acid phosphate per acre has doubled the yield on uplands. Many of our friends have not fully realized what they have in this plant. Lespedeza is one of the greatest legumes ever grown in this country. As a forage crop there is none better as far as it goes. There is enough idle land growing, or that should be growing lespedeza in the State to furnish sufficient hay to feed all of the livestock in the State if harvested each year. There is no better quality of hay known. All open idle lands should be seeded to lespedeza as a soil improver if for no other purpose. A small quantity of seed sown on top of the ground in early Spring will soon furnish a perfect stand. The seed are usually allowed to be scattered through the manure of livestock but this method is too slow, considering the fact that a small quantity of seed sown per acre will furnish perfect seeding after the first year.

It is a common practice to sow fall oats and the latter part of March, section harrow the oats and seed to lespedeza using not less than 25 lbs. of seed per acre. After the oats are harvested, the lespedeza takes charge and produces a good crop under favorable conditions. The seed sell from $3.00 to $6.00 per bushel. Many sections of the country make the growing of seed for market one of their chief money crops.

The common method of preparing land for seeding is to disk the land diagonally across the rows and run the section harrow at right angles to the disk. This will about level the land. The seed should be sown on freshly harrowed soil in March and should not be covered. The weeds and grass should be clipped with a mower once or twice during the year to give the plants the advantage.

There are several machines and attachments for machines on the market for harvesting seed. A greater part of the seed on the market are secured in this way. After a light frost in the fall, the seed shatter out easily and are caught in pans attached to the machine. The thin soils and second growth after hay has been harvested, or pasture lands, are used for seed harvesting in most instances.

ALFALFA

In the variety test after the first cutting, the plantings were destroyed on account of poor stands. The seasons for the past three years have been extreme, either too wet or too dry. The fertile clay uplands or the well drained valley lands will grow alfalfa without any trouble if four or five tons of crushed limestone is used per acre. Soil to be seeded to alfalfa should be prepared at least 60 days prior to seed planting, the lime applied to the surface and harrowed in. Weeds and grass can be kept down by the use of a disk or section harrow. The soil should be firm at seed planting time. We have had better results with fall plantings. After a rain in September, we find a most desirable time to plant. Spring plantings can be made. Use from 20 to 25 pounds of seed per acre and cover with a section harrow. In our variety test we found that common alfalfa and Disco No. 12. gave best results. One acre or more near the home for hogs and poultry to furnish early grazing, will be found profitable. In the non-lime soil, Lespedeza and soy beans can take the place of Alfalfa as a forage crop on account of the absence of lime. However, soy beans are greatly benefited by the use of lime.

SOY BEANS

The following varieties were planted in a variety study test. Laredo, Otootan, Biloxi, Virginia, Mammoth Yellow and Wilson. Although the seasons were extremely dry the plantings on good soil made splendid growth. The fall rains practically destroyed the test. We were unable to secure satisfactory weights of hay or of the beans. Each of the above varieties have their place in Southern Agriculture. The Laredo, Otootan, and Early Virginia are very desirable varieties. The Otootan is very much later maturing than the other two varieties, but when planted early, will produce more forage per acre. These varieties do not shatter out very freely, if harvested at the proper time, which adds to their value. The Laredo and Virginia are desirable when hay is to be harvested before cotton picking begins. The above three varieties resemble each other in growth having small stems, making a fine quality of hay.

The Biloxi and Mammoth Yellow have a much coarser stem and are tall growing varieties. The Biloxi is very late in maturing but does not shatter out in harvesting. The Mammoth Yellow shatters out badly in harvesting and at present is the most widely known variety. All of the above varieties are abundant fruiters.

Soy beans can be planted in narrow rows or broadcast on good fertile soil, whether grown for seed or for hay. If a three foot row is used it only requires about one and one half gallons of seed to plant an acre of the following varieties. Laredo, Otootan, Virginia and Wilson. The seed of the Biloxi and Mammoth Yellow are larger and more seed are required. Soy beans will grow on land too wet or too dry for corn. Unprofitable wet farm lands do well in soy beans.

This fact when put into practice will enable thousands of acres of here-to-fore unprofitable lands to be made as profitable as any lands on the farm. When narrow rows are used about two cultivations are necessary. From 200 to 400 pounds of acid phosphate should be used per acre on the soils of this section. While all soy beans are legumes and are supposed to get a greater part of the nitrogen used from the air, it will be found that from 100 to 200 lbs. of nitrate of soda will add much to the growth of the beans. The small seeded varieties have a distinctive value, when grown on fertile soil, the seed that shatter out in harvesting, if disked in, will come up the following spring and produce a volunteer crop of beans. This is only true on good fertile soil. In many cases oats are sown after the beans are harvested and in disking in the oats, the beans are covered that were shattered out in harvesting. After the oats are harvested in June, the volunteer beans take charge of the land and make a wonderful hay crop, three to four tons per acre a good year. The most of our planting of Laredo beans this year was on thin land after oats. The extreme dry summer almost destroyed the hay crop. There are several sections of the country that are growing soy beans for seed purposes. In the past the beans have been mowed and raked as for hay and then thrashed. Many seed are lost in the process and besides it is expensive. There are now on the market, bean harvesters, both for single rows and for beans planted broadcast that thrash out the beans standing in the field. This is a great labor saving process and also a saving of seed. These harvesters are mostly horse drawn and do splendid work under proper conditions. They are not very expensive, from $175.00 to $250.00 according to the size. We like this method of harvesting also because only the beans are removed from the field. The plants left on the soil greatly improve the land. From 15 to 30 bushels of beans per acre is not an uncommon yield.

If every row of corn planted in the State was seeded to soy beans, it would furnish more forage and feed and add much to the fertility of the soil. There are many farms too poor to grow corn successfully. On such farms, soy beans could be used to profit taking the place of corn for the workstock in furnishing both forage and grain.

DAIRYING

The Station dairy at present bids fair to be one of the best in this section of the State. The season being extremely dry, it was necessary to feed silage and some grain all the summer. That means small profits. The grade cows of the herd were disposed of the past summer and registered cows from the Poplarville Station took their places. As soon as we can dispose of a few grades we now have on hand, only registered Jerseys will be held on the Station. From the beginning, the Station dairy was recognized as a necessity to furnish a market on the farm for legumes and other crops grown and to utilize the thin lands for grazing. How this section has es-

caped dairying for so long a time we are unable to understand. An attempt has been made to run the dairy so as not to interfere with regular Station work, leaving the experimental feature to the College herd at the A. & M. College of Mississippi. A good part of milk from the herd is sold locally at the dairy barn, and some cream is shipped on the butter fat basis. The skim milk is fed to the calves and poultry. This method interferes but little with regular farm work.

We have several projects in progress to be reported later to ascertain the value of cow manure measured in pounds of cotton or other crops, also a system of rotation including forage crops suited for dairy feed etc.

The dairy possibilities in this section are good. There is a cream and milk market within forty miles of any farm in North Mississippi. There are thousands of acres of idle land that could be made to grow feed and pasture, with but little expense. There are good cows that can be had in almost any sections without much effort. Cream separators can be had at almost your own terms. It is advisable for most people to start the dairy with the best cows at hand and cull out the poorer by keeping records and purchasing good ones in their places. There is idle labor on the farm half the year that has to be fed all the year. If the idle lands of this section are ever redeemed, the dairy cow and poultry will play an important part. The richest State in the Union has dairying as her chief industry. The South has everything in her favor, if we could be divorced from cotton—mild winters, cheap lands, cheap labor, long growing seasons. We can use inexpensive barns. Markets are also among the best of the country.

This Station has been using a milking machine for the past five years that has given good satisfaction. One man attends to twenty cows, milks and feeds, and maintains a sanitary dairy barn and milk house. Under ordinary conditions a milking machine will not be necessary with cheap farm labor plentiful. Any man that attempts to buy all feed for his dairy herd, will be obliged to get a fine price for milk if he stays in business long. We find a silo indispensable to our dairy, but with plenty of velvet beans grown in corn and plenty of lespedeza and soy bean hay, good results can be obtained without a silo. Dairying does not mean less cotton, but more fertile land on which to grow larger crops. Bermuda grass, lespedeza and white clover are the pasture plants for this section. A cow cannot manufacture a large quantity of milk without plenty of the right kind of material to do the work with.

In closing this report we wish to thank Director J. R. Ricks for the kind and pleasant way he has directed the work, also we wish to state that Mr. Harris F. Wallace and Mr. O. M. Ryan have assisted very materially in the success of the year's work. Mr. Otis B. Casanova relieved Mr. Wallace September 15, and has done good work.

SEED SOURCES, 1925

Cotton

Acala—L. E. Gleeck, Box 334, Memphis, Tenn.
Cleveland, Coker—Pedigreed Seed Co., Hartsville, S. C.
Cleveland, Pied.—Piedmont Pedigreed Seed Farms, Commerce, Ga.
Cleveland, Wan.—Wannamaker-Cleveland Seed Farms, St. Matthews, S. C.
Cleveland 54—Miss. Exp. Sta., A. & M. College, Miss.
Cook 1010—D. N. Williamson Estate, Cedar Bluff, Ala.
D & P L No. 4—Delta and Pine Land Co., Scott, Miss.
D & P L No. 5—Delta and Pine Land Co., Scott, Miss.
D & P L No. 8—Delta and Pine Land Co., Scott, Miss.
Delfos 631—Delta Branch Experiment Station, Stoneville, Miss.
Delfos 6102—Delta Branch Experiment Station, Stoneville, Miss.
Delfos 911—Delta Branch Experiment Station, Stoneville, Miss.
Express, Lightning—Pedigreed Seed Co., Hartsville, S. C.
Express 432—Stoneville Pedigreed Seed Co., Stoneville, Miss.
Haaga 68—Oscar J. Haaga, Memphis, Tenn.
Haaga 86—Oscar J. Haaga, Memphis, Tenn.
Half & Half, Mahon—H. K. Mahon, Holly Springs, Miss.
Half & Half, Sum.—B. F. Summerour, Norcross, Ga.
Lone Star 65—Miss. Exp. Sta., A. & M. College, Miss.
Mex. Big Boll—Edgecombe Seed Breeders Assn., Tarboro, N. C.
Miller—Miss. Exp. Sta., A. & M. College, Miss.
Salsbury—Delta and Pine Land Co., Scott, Miss.
Trice, Burdette—Burdette Plantation, Burdette, Ark.
Trice, Miss. Sta.—Miss. Experiment Station, A. & M. College, Miss.
Webber, Deltatype, Pedigreed Seed Co., Hartsville, S. C.
Willis—Mrs. Stark Willis, Graysport, Miss.

Corn

Cocke's Prolific, Delta—Delta Branch Experiment Station, Stoneville, Miss.
Cocke's Prolific, Station—Miss. Experiment Station, A. & M. College, Miss.
Delta Prolific—Burdette Plantation, Burdette, Arkansas.
Ellis—Coker Pedigreed Seed Co., Hartsville, S. C.
Hastings—H. G. Hastings Co., Atlanta, Ga.
Jelli Course Twins—Tenn. Experiment Station, Knoxville, Tenn.
Large Golden Dent—Ullathorne Seed Co., Memphis, Tenn.
Mosby, Delta—Delta Branch Exp. Station, Stoneville, Miss.
Mosby, Lee—M. B. Lee, Corinth, Miss.
Mosby, Station—Miss. Experiment Station, A. & M. College, Miss.
Mosby, Suttle—J. E. Suttle, Louisville, Miss.
Paymaster—W. H. Neal, Lebanon, Tenn.
Paymaster, Holly Springs—Holly Springs Branch Exp. Station, Holly Springs, Miss.
Yellow Dent, Fer.—Ferguson Seed Farms, Sherman, Texas.
Yellow Dent, Sta.—Miss. Experiment Station, A. & M. College, Miss.