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Cotton experiments, 1927 - South Mississippi Experiment Station

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COTTON EXPERIMENTS, 1927

SOUTH MISSISSIPPI EXPERIMENT STATION

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A. & M. COLLEGE, MISSISSIPPI
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COTTON EXPERIMENTS, 1927

With few exceptions the work done here in 1927 with cotton has been the same as that done in 1925 and 1926. This work, especially that with fertilizers, should be more valuable by reason of the fact that it was the second and third time the experiments were conducted on the same plots.

The seasons here in 1927 were very unfavorable for cotton and all yields reported in this bulletin are quite low as a result. While the total rainfall from March to November inclusive was not unusually high, it came in such a way and at such times as to cause this cotton to shed badly long before the boll weevil did any damage of consequence. Comparing the total rainfall with previous years, our records show that during the months above given the rainfall here was 31.08 inches in 1925, 46.95 in 1926 and 40.31 in 1927, though this is being written four days before the close of the month.

The only material addition to our regular work with cotton this year has been the starting of cooperative work with Dr. D. C. Neal, Plant Pathologist of the Central Station at the A. & M. College, testing the effects of a number of potash carriers used in varying amounts on the control of rust and wilt in cotton.

From 1919 through 1924, 56 plots of land here had been used for fertilizer experiments with cotton, but for several seasons these plots had been taken from cotton and in 1925 and 1926 had been planted to corn, this having been fertilized uniformly the first year with nitrate of soda alone and the second year with a mixture of nitrate of soda and acid phosphate, no potash having been used on any of the plots. The idea in so doing was to plant cotton again on these plots and fertilize it in the same ways it had been through 1924 to see if the change to corn would influence the rust and wilt, both of which had become quite bad, especially rust where no potash had been used.

This was the only land available in 1927 when it was decided to cooperate with Dr. Neal in the above mentioned work, and the previous treatments lent themselves well to work of this character for many of the plots had received no potash since 1918, if they had ever received any. In planning this work, plots which during this time had received no potash were used as checks in Dr. Neal's work, for experiments had shown that until the natural supply of potash had been exhausted by several years cropping the addition of this element had not given increased yields. The result was that from the beginning of the season plots without potash showed up the need of this material decidedly and by the middle of the growing season could easily be told at a glance.

Fifty-six one-twelfth acre plots were used in this test and the various treatments were replicated four times each on inoculated and uninoculated land. While wilt had been present over a large part of the plots inoculated even in 1924, this half of the field was thoroughly inoculated with wilt cultures made by Dr. Neal, previous to the application of the fertilizer or the planting of the cotton.

The basis of the fertilizer used uniformly over the field, except on four

unfertilized plots, was 600 pounds per acre of an 8-4-0 fertilizer, to which was added potash from various sources, running from 4 per cent up to 12 per cent. When the percentage of potash was varied, muriate was used as its source and when the source of potash was under test a fertilizer containing 8 per cent was always used. Unfortunately, we were not able to use check plots at the beginning and end of each series nor so often between as we should have liked, due to the arrangement of these plots years before.

Table No. 1 gives the results of this work in averages for the inoculated and uninoculated plots as well as the percentage of stalks affected with wilt in each.

Fig. 1—Receiving P2O5-N, but no K2O.

Fig. 2—Receiving Phos.-N and K2O.

Table No. 1—Effect of Potash Fertilizers on Wilt

Treatment per acre			Increase lbs. seed cotton per A 600 8-6-0 as zero		
Pounds	Analysis	Source of Potash	No inoculation	Wilt inoculation	Percent wilt
No fertilizer			-323	-271	24.3
600	8-6-0				23.6
600	8-6-8	KCL	448	322	16.0
600	8-6-8	K2SO4	290	243	6.0
600	8-6-8	D. manure salt	367	249	20.0
600	8-6-8	Kainit	424	340	5.0
600	8-6-4	KCL	437	339	5.4
600	8-6-10	KCL	403	256	7.7
600	8-6-12	KCL	288	258	16.3

Regular Fertilizer Work

The same fertilizer work started here and elsewhere in the state in 1925 by all the stations, except the one in the Delta, was continued here this year on the same plots, this being on leased land selected because of its uniformity. This being the third year of the experiment, wilt is beginning to show up badly on some of the plots and this, with poor seasons for cotton, caused the yields this year to be very unsatisfactory, but differences in yield, due to fertilizers, still show up markedly.

Weevils were especially bad toward the end of the season but did not reduce yields anything like as much as did the seasons. All this cotton was poisoned three times, as was all the cotton on this station, and weevils got

Table No. 2—Analysis Test, Moody Field, 1927

Pounds of material applied per acre			Analysis	Pounds of seed cotton per acre			Dollars per acre		
Acid Phos.	Nit. of soda	Mur. of potash		Plot yield	Check yield	Increase	Value of increase	Cost of fert.	Net gain
No fertilizer				513					
300	160	100	8-4-8	1020	466.75	553.25	38.73	9.33	29.40
300	160	75	8-4-6	1003	420.50	572.50	40.07	8.73	31.34
300	160	50	8-4-4	977	374.25	602.75	42.19	8.13	34.06
No fertilizer				328					
300	160	25	8-4-2	1053	302.75	750.25	52.52	7.53	44.99
300	160		8-4-0	845	277.50	567.50	39.72	6.93	32.79
300	320	50	8-8-4	917	252.25	664.75	46.53	12.81	33.72
No fertilizer				227					
300	240	50	8-6-4	954	223.50	730.50	51.13	10.47	40.66
225	160	50	6-4-4	807	220.00	587.00	41.09	7.57	33.52
150	160	50	4-4-4	653	216.50	436.50	30.55	7.00	23.55
No fertilizer				213					
600	320	100	8-4-4	936	279.25	656.75	45.97	16.26	29.71
900	480	150	8-4-4	1002	345.50	656.50	45.95	24.39	21.56
1200	640	200	8-4-4	1065	411.75	653.25	45.73	32.52	13.21
No fertilizer				478					

NOTE—In all tables reporting analysis tests the three fertilized plots received 1200, 1800, and 2400 pounds respectively, of an 8-4-4 fertilizer. All other treatments received at the rate of 600 pounds per acre of the indicated analysis.

beyond control long after the cotton had had time to put on a maximum crop if the seasons earlier had been favorable to its fruiting. In all experiments at Hattiesburg perfect stands were obtained. In the main, good stands were maintained throughout the year except on the checks, or unfertilized plots, where some of the cotton was killed by cool weather when it was quite young and where wilt was especially bad. Practically all this cotton was planted between the first and tenth of April, all cotton in the same test being planted the same day.

Table No. 2 gives the results in this analysis test in detail, the results reported being the average of triplicate tests.

Test with Potash Sources

In the same field described above, work was done for the third year on the same plots, testing five sources of potash under cotton. In this work all plots were fertilized uniformly with an 8-4-0 fertilizer at the rate of 600 pounds per acre and 24 pounds per acre of actual potash applied from the several sources of each of three plots receiving it. This was done in the same way described above and the variety of cotton, Lone Star 65, planted the same day. While the differences due to the presence or absence of potash under this cotton were never so outstanding as in the cooperative work with Dr. Neal, the final weights all showed material increases as a result of this potash. This was the first time the use of potash had materially affected yields in this particular work.

Table No. 3 gives this work in detail, each result reported being the average of triplicate tests.

Table No. 3—Potash Sources, Moody Field, 1927.

Pound per acre	Analysis	Sources of Potash	Pounds of seed cotton per acre		
			Plot Yield	Check Yield	Increase
600	8-4-0		692		
600	8-4-4	Sul. pot.	748	674.00	74.00
600	8-4-4	Pot. chlo.	863	656.00	207.00
600	8-4-4	Kainit	807	638.00	169.00
600	8-4-0		630		
600	8-4-4	D. Man. salt	732	648.33	83.67
600	8-4-4	Kemfert	751	676.67	74.33
600	8-4-0		705		

Tests with Six Nitrogen Sources

In the same field with the analysis and potash sources tests above given, experiments were conducted for the third time on the same plots, testing six sources of nitrogen. In this work all plots were fertilized uniformly with 600 pounds per acre of an 8-0-4 fertilizer and 24 pounds of actual nitrogen applied from the several sources to each of the three plots receiving it. These fertilizers were applied the same day and the same way as described under the analysis tests and Lone Star 65 cotton seed planted a few days later. The cotton was treated the same way as to cultivation, poisoning, etc., as that above mentioned and suffered alike as a result of poor seasons.

Table No. 4 gives these results in detail.

Table No. 4—Nitrogen Sources, Moody Field, 1927

Pounds per acre	Analysis	Sources of Nitrogen	Pounds of seed cotton per acre		
			Plot Yield	Check Yield	Increase
600	8-0-4		592		
600	8-4-4	Nit. soda	877	615.25	261.75
600	8-4-4	Ammon. sul.	848	638.50	209.50
600	8-4-4	Cal. cyanam.	990	661.75	328.25
600	8-0-4		685		
600	8-4-4	G. Cal. nit.	964	663.00	301.00
600	8-4-4	Urea	967	641.00	326.00
600	8-4-4	Leunasalpeter	969	619.00	350.00
600	8-0-4		597		

Additional Nitrogen Sources Tests

The regular nitrogen sources tests given in Table No. 4 were started in 1925 and later when it was decided to test other sources there was no available land near by and such additional work had to be started in another field in 1926 where it has been done since. This work was in three replications, all plots receiving the equivalent of 600 pounds per acre of an 8-0-4 fertilizer with the nitrogen plots receiving 24 pounds of actual nitrogen per acre. This work was done on land used as pasture up to 1926 and was not so uniform in composition as that on which the regular nitrogen sources tests were conducted.

Table No. 5 gives the results obtained in detail, each being the average of three plots devoted to the same treatment.

Table No. 5—Additional Nitrogen Sources, 1927.

Pounds per acre	Analysis	Sources of Nitrogen	Pounds of seed cotton per cwt.		
			Plot Yield	Check Yield	Increase
600	8-0-4		937.5		
600	8-4-4	Nitropo	1117.5	900.00	217.50
600	8-4-4	Fish scrap	1027.5	862.50	165.00
600	8-4-4	Tankage	952.5	825.00	127.50
600	8-0-4		787.5		
600	8-0-4		1035.0		
600	8-4-4	½ fish scrap			
		½ NaNo3	1245.0	1021.88	223.12
600	8-4-4	½ Tankage			
		½ NaNo3	1185.0	1008.75	176.25
600	8-4-4	Cal. nitrate	1207.5	995.63	211.87
600	8-0-4		982.5		

Tests with Nitrogen Sources at Purvis

In 1926 tests with five nitrogen sources were started at Purvis in Lamar County in cooperation with County Agent W. M. Morris on the farm of E. I. Saye, located about two miles north of Purvis, immediately beside Highway 11. Suitable land was available for only five such tests and

since Mr. Morris was already using nitrate of soda and calcium cyanamid in other tests on the same farm, our work eliminated these and used the ones mentioned in Table No. 6, which gives the results obtained in duplicate tests. The same method of applying these fertilizers was used in this experiment as in the ones on the station proper, but no poisoning was done for the control of the boll weevil.

Table No. 6—Nitrogen Sources, E. F. Saye, Purvis, Miss, 1927

Pounds per acre	Analysis	Sources of Nitrogen	Pounds of seed cotton per acre		
			Plot Yield	Check Yield	Increase
600	8-0-4		960		
600	8-4-4	Ammon. sul.	1095	963.75	131.25
600	8-4-4	Leunasalpeter	1080	967.50	112.50
600	8-4-4	Cal. nit.	1110	971.25	138.75
600	8-0-4		975		
600	8-4-4	Urea	1065	945.00	120.00
600	8-4-4	Tankage	1035	915.00	120.00
600	8-0-4		885		

Factory Mixed vs. Home Mixed Fertilizers Under Cotton

This work was done in the same field mentioned in the preceding paragraph in regard to additional nitrogen sources tests, and the same plots fertilized in the same way as in 1926 were used again in 1927. The home mixtures used were made by mixing acid phosphate, nitrate of soda and muriate of potash in the proper proportions to furnish the same plant food as would be supplied by the factory mixed fertilizers. In carrying out the experiment small quantities of 8-5-4 and 10-5-3 fertilizers were ordered from the factories, but the 8-4-4 fertilizer used was taken from a large shipment ordered and used here for general work.

The same thing may be said about the effects of the weather on these yields as has been said elsewhere in this circular. This cotton was poisoned three times against the weevil and while these got to be quite bad toward the latter part of the season, the low yields were due more to adverse weather conditions than to the weevil. The fertilizers used in this test were applied by hand on top of lists that had been made some time before, mixed with the soil and beds completed. The applications were weighed for each

Table No. 7—Factory vs. Home Mixed Fertilizer, 1927

Lbs. material applied per A		Analysis	Pounds of seed cotton per acre		
Factory mixed	Home mixed		Plot Yield	Check Yield	Increase
No fertilizer			547		
600		8-4-4	1100	584.00	516.00
	600	8-4-4	1070	621.00	449.00
600		8-5-4	1035	658.00	377.00
No fertilizer			695		
	600	8-5-4	1040	696.75	343.25
600		10-5-3	1075	698.50	376.50
	600	10-5-3	1015	700.25	314.75
No fertilizer			702		

row and put out March 29 and Lone Star 65 cotton seed planted April 4. Perfect stands were obtained.

Table No. 7 gives the results of this work in detail, the figures given being the average of triplicate tests in each instance.

Old Fertilizer Tests with Cotton

There are twelve plots in this test with no duplications and these have received the same quantities of nitrogen, phosphorus and potash, when fertilized, since 1919. These plots were planted two years to sweet potatoes, one year to corn, and 1927 was the sixth successive year they have been planted to cotton. In the beginning of the use of cotton on these plots the presence or absence of potash in a fertilizer made little or no difference in the appearance or final yield of the crop, but in recent years the plot without potash has gone badly to pieces, wilt and rust together having brought the yields practically down to the unfertilized plot beside it. This unfertilized plot has also been much less affected by rust or wilt than the one well fertilized, except for potash. This would indicate that when given liberal amounts of phosphorus and nitrogen during all these years, the supply of potash in the soil had been exhausted earlier than where no fertilizer had been used.

From the beginning the absence of phosphorus or nitrogen in the fertilizers used has been quite apparent both in appearance and yield. It was the work on this particular acre that drew the attention of scientists and fertilizer men to this station, resulting in the holding here of several schools last year and this, when scientists, fertilizer manufacturers and fertilizer salesmen came here in large numbers to study these and other experiments with fertilizers in progress here. This particular work also led this year to the inauguration of the further work with potash done with Dr. Neal and described elsewhere in this circular, as well as to the future work contemplated, the expense of which will be borne by the potash importers.

This particular work has also attracted much attention from visiting farmers and students who learn from it the importance of using balanced fertilizers in any permanent system of agriculture on similar types of soil. The diagram following shows the arrangement of these plots, the way they have been fertilized for the past nine years and the 1927 yields of

DIAGRAM

Old Fertilizer Test
(Amounts applied and yields per acre)

400 A. P. 100 P. C.	414	200 A. P. 200 N. S. 100 P. C.	837	400 A. P. 200 N. S. 100 P. C.	981	400 A. P. 200 N. S.	324
Check	54	Check	147	Check	351	Check	216
400 A. P. 400 N. S. 250 P. C.	1080	200 N. S. 100 P. C.	463	400 A. P. 200 N. S. 150 P. C.	1089	400 A. P. 200 N. S. 50 P. C.	900

seed cotton from the several treatments. In interpreting the results it should be realized that the natural fertility of the field varies widely, due to its topography, making necessary the use of many checks. In this table acid phosphate is designated as A. P., nitrate of soda as N. S. and potassium chloride or muriate of potash as P. C. In order to show difference in yield due to the several fertilizer combinations, it is necessary to subtract the check yield from the adjoining fertilized plots, since such check yields vary so greatly. The diagram is self explanatory.

Varieties of Cotton

Tests with 23 varieties of cotton were carried out here in 1927 on the same land used in 1926 and fertilized uniformly with an 8-4-4 fertilizer applied at the rate of 600 pounds per acre. These varieties were planted in single rows, each variety being repeated eight times in most instances and average yields are reported below. Samples of each were taken and sent to the A. & M. College for ginning and determination of lint percentage, length of staple and value per pound of the resulting samples.

Table No. 8 gives the results of this work in detail.

Table No. 8—Cotton Varieties, Poplarville, 1927.

Variety	Pounds per acre		Lint data			Total dollars per acre	Rank in value
	Seed cotton	Lint	Percentage	Length	Cents per lb.		
Trice	1225	400.6	32.7	1	20.71	96.97	5
Cleveland, Wan.	1026	374.5	36.5	7/8	19.25	83.17	15
Cleveland 5	1104	388.6	35.2	1	20.71	92.64	8
Cleveland 54	1084	375.1	34.6	7/8f	19.59	85.53	12
Cleveland, Wilson	1086	357.3	32.9	7/8f	19.59	82.39	16
Cleveland, Pied.	1044	339.3	32.5	7/8	19.25	77.30	20
Half & Half	994	392.6	39.5	13/16	18.38	82.38	17
Cook 1010	951	372.8	39.2	13/16	18.38	78.35	19
Willis	1021	332.8	32.6	7/8f	19.59	76.90	22
Acala	1019	358.7	35.2	15/16f	20.31	84.08	13
Miller	951	318.6	33.5	1	20.71	76,73	23
D. & P. L. 4	931	323.1	34.7	1	20.71	77.24	21
D. & P. L. 8	952	347.5	36.5	15/16f	20.31	80.86	18
Deltatype	997	311.1	31.2	1 3/16	24.81	88.84	10
Delfos 910	1092	346.2	31.7	1 1/8f	23.81	95.11	6
Delfos 1374	1090	340.1	31.2	1 1/8f	23.81	93.73	7
Delfos 911	1292	423.8	32.8	1 1/16f	22.03	108.12	1
Delfos 1341	1254	426.4	34.0	1 1/16f	22.03	108.01	2
Delfos 6102	1194	386.9	32.4	1 1/16f	22.03	98.95	4
D. & P. L. 6	1100	403.7	36.7	1 1/8	23.31	105.94	3
Light. Express	1066	344.3	32.3	1 1/8	23.31	92.53	9
Lone Star 168	985	334.9	34.0	1 1/16	21.71	83.76	14
Lone Star 65	1025	349.5	34.1	1 1/16	21.71	87.36	11

After planting the quantity required of the seed tested here, sixteen of these varieties were tested in a cooperative experiment with County Agent A. J. Flowers of Pike County on the farm of Mr. G. H. Alford near Progress Consolidated School, where cooperative work with fertilizers under cotton was also done. It might be well to mention here that Mr. Flowers and Mr. Alford hold annually at this consolidated school farmers meetings lasting

three days, to which farmers and business men from Pike and adjoining counties come to hear discussions on all phases of farm work, and on the days devoted to farm crops a representative of this station has always been present to discuss such problems as are most timely, using these tests as demonstrations of the proper use of fertilizers and varieties.

Table No. 9 gives the yields of cotton obtained this year in these tests.

Table No. 9—Cotton Varieties, Pike County, 1927.

Variety	Pounds per acre		Lint data			Total dollars per acre	Rank in value
	Seed cotton	Lint	Percentage	Length	Cents per lb.		
Trice	1440	470.9	32.7	1	20.71	113.99	6
Cleveland, Wan.	1030	376.0	36.5	7/8	19.25	83.50	13
Cleveland, Pied.	1380	448.5	32.5	7/8	19.25	102.18	9
Half & Half	1290	509.6	39.5	13/16	18.38	106.93	8
Cook 1010	1230	482.2	39.2	13/16	18.38	101.34	10
Willis	1250	407.5	32.6	7/8f	19.59	94.15	12
Acala	1410	496.3	35.2	15/16f	20.31	116.33	4
Miller	920	308.2	33.5	1	20.71	74.23	14
D. & P. L. 4	1190	412.9	34.7	1	20.71	98.72	11
Delfos 911	1730	567.4	32.8	1 1/16f	22.03	144.76	1
Delfos 6102	1300	421.2	32.4	1 1/16f	22.03	107.73	7
D. & P. L. 6	1460	535.8	36.7	1 1/8	23.31	140.60	2
Light. Express	1540	497.4	32.3	1 1/8	23.31	133.66	3
Lone Star 65	1350	460.4	34.1	1 1/16	21.71	115.07	5

Rotation Experiment

In our regular annual report we discuss the use here of 84 plots of land fertilized the same way and used since 1919 in testing different cropping systems. On 21 plots, replicated four times, we are using 12 cropping systems in which cotton is used in seven rotations. On one plot of each series, cotton has been planted continuously and for the past two years the cotton on such plots has gone largely to pieces as a result of wilt. This year on the sandier parts of this field the land used continuously for cotton has made less than 100 pounds of seed cotton per acre, whereas on adjoining plots where it has been grown in rotation with other crops the yields have been above 700 pounds, showing the danger of continuously planting of cotton on the same land from the standpoint of disease alone.

High Analysis vs. Low Analysis Fertilizers

In 1927 we conducted on 21 plots of land experiments in triplicate to compare high and low analysis fertilizers, using acid phosphate, nitrate of soda and muriate of potash in making the low analysis fertilizer to be thus compared. Six hundred pounds per acre of the home mixed 8-4-4 fertilizer was used as a check and this furnished the same amount of phosphorus, nitrogen and potash as was contained in 150 pounds of the new German fertilizer, nitrophoska, analyzing 32-16-16. Three hundred pounds of a 15-5-5 factory mixed fertilizer was compared with 600 pounds of a 7½-2½-2½, home mixed. Three hundred pounds of 20-16½-0, or ammophos, was compared with 600 pounds of a home mixture analyzing 10-8¼-0.

The home mixed 8-4-4, being used as a check, was repeated several times throughout the 20 plots, or a total of six times all told. The other fertilizers were each repeated three times, but two plots, one fertilized with 20-16½-0 and the other with 32-16-16 were discarded, due to bad stand.

The average yield of seed cotton from six plots fertilized at the rate of 600 pounds per acre of home mixed 8-4-4 was 1002 pounds; the average yield of two plots fertilized with 150 pounds of 32-16-16 was 900 pounds; the average yield of three plots fertilized with 300 pounds of 15-5-5 was 1044; the average yield of three plots fertilized with 600 of 7½-2½-2½ was 1188; the average yield of two plots fertilized with 300 pounds of 20-16½-0 was 1020; and the average yield of three plots fertilized with 600 pounds of 10-8¼-0 was 1050.

These fertilizers were applied on top of a list and harrowed in on April 2, and Lone Star 65 cotton was planted April 4. In the earlier part of the season the cotton fertilized with the high analysis fertilizers did not grow off as well as when fertilized with those of low analysis and considerably more of the cotton died when very young, but as the season advanced the cotton improved and toward the end little difference could be told so far as the eye was concerned. Possibly some of the difference between the high and low analysis fertilizers might be attributed to this loss of stand. As reported above, we did discard one plot fertilized with 20-16½-0 and another fertilized with 32-16-16 because the yields were entirely too low and out of line, possibly due to bad stands.

Cooperative Fertilizer Tests with Cotton

In 1926 cooperative fertilizer tests were conducted with cotton in four South Mississippi counties, always cooperating with the county agents of such counties and on farms operated by careful men capable of keeping

Table No. 10—Analysis Test, G. H. Alford, Pike County, 1927.

Lbs. material applied per A.			Analysis	Lbs. seed cotton per A.			Dollars per acre		
Acid phos.	Nitrate of soda	Mur. of potash		Plot yield	Check yield	Increase	Value of increase	Cost of fert.	Net gain
No fertilizer				480.00					
300	160	100	8-4-8	886.67	420.00	466.67	32.66	9.33	23.33
300	160	75	8-4-6	920.00	360.00	560.00	39.20	8.73	30.47
300	160	50	8-4-4	946.67	300.00	646.67	45.27	8.13	37.14
No fertilizer				240.00					
300	160	25	8-4-2	906.67	261.67	645.00	45.15	7.53	37.62
300	160		8-4-0	806.67	283.34	523.33	36.63	6.93	29.70
300	320	50	8-8-4	980.00	305.00	675.00	47.25	12.81	34.44
No fertilizer				326.67					
No fertilizer				433.33					
300	240	50	8-6-4	1060.00	415.00	645.00	45.15	10.47	34.68
225	160	50	6-4-4	926.67	396.67	530.00	37.10	7.57	29.53
150	160	50	4-4-4	1000.00	378.33	621.67	43.52	7.00	36.52
No fertilizer				360.00					
No fertilizer				340.00					
600	320	100	8-4-4	1360.00	366.67	993.33	69.53	16.26	53.27
900	480	150	8-4-4	1300.00	393.33	906.67	63.47	24.39	39.08
1200	640	200	8-4-4	1346.67	420.00	926.67	64.87	32.52	32.35
No fertilizer				446.67					

Table No. 11--Analysis Test, E. F. Saye, Purvis, Miss., 1927

Lbs. material applied per A.			Analysis	Lbs. seed cotton per A.			Dollars per acre		
Acid phos.	Nitrate of soda	Mur. of potash		Plot yield	Check yield	Increase	Value of increase	Cost of fert.	Net gain
No fertilizer				960					
300	160	100	8-4-8	1380	922.50	457.50	32.02	9.33	22.69
300	160	75	8-4-6	1275	885.00	390.00	27.30	8.73	18.57
300	160	50	8-4-4	1290	847.50	442.50	30.97	8.13	22.84
No fertilizer				810					
300	160	25	8-4-2	1260	780.00	480.00	33.60	7.53	26.07
300	160		8-4-0	1155	750.00	405.00	28.35	6.93	21.42
300	320	50	8-8-4	1275	720.00	555.00	38.85	12.81	26.04
No fertilizer				690					
300	240	50	8-6-4	1170	708.75	461.25	32.29	10.47	21.82
225	160	50	6-4-4	1230	727.50	502.50	35.17	7.57	27.60
150	160	50	4-4-4	1185	746.25	438.75	30.71	7.00	23.71
No fertilizer				765					
600	320	100	8-4-4	1425	780.00	645.00	45.15	16.26	28.89
900	480	150	8-4-4	1425	795.00	630.00	44.10	24.39	19.71
1200	640	200	8-4-4	1455	810.00	645.00	45.15	32.52	12.63
No fertilizer				825					

accurate records with such assistance as can be given by us and the agents themselves. The cooperator in Harrison County did not care to continue the work this year, but it was continued in each of the other three counties.

In all of these tests the same fertilizer formulas are used, being the ones worked out nearly three years ago at a conference at the A. & M. College where the best thought of all the experiment station workers of the state, with the assistance of the leading fertilizer men of the country, was brought into play. These same tests are being carried out at all the hill stations of the state on the stations proper and in all their cooperative work and can therefore be easily compared.

We have already mentioned other cooperative work in Pike and Lamar Counties and it will suffice here to say that in Pike County these fertilizer tests were conducted in three replications, while that in Lamar county was done with only two replications, due to lack of suitable land. Tables No. 10 and No. 11 give in detail the results of these tests. In each of these tests the same plots were used for the second time.

For the third year in succession this work was done in Forrest County, cooperating with County Agent W. M. Sellers and on the farm of Mr. T. E. McCardle. This work was done in four replications and Table No. 12 gives it in detail. On account of poor stands in certain parts of Mr. McCardle's field, apparently due to a stoppage of the planter in this part of the field, we were forced to make corrections in certain plots which we did together by counting the stalks on these and adjacent plots and estimating differences due to stands. With these few exceptions the yields reported below are just as they were weighed in the field after calculating them on the acre basis.

Table No. 12—Analysis Test, J. E. McCardle, Forrest County, 1927.

Lbs. material applied per A.			Analysis	Lbs. seed cotton per A.			Dollars per acre		
Acid phos.	Nitrate of soda	Mur. of potash		Plot yield	Check yield	increase	Value of increase	Cost of fert.	Net gain
No fertilizer				900					
300	160	100	8-4-8	1433	894	539	37.73	9.33	28.40
300	160	75	8-4-6	1408	888	520	36.40	8.75	27.67
300	160	50	8-4-4	1458	882	576	40.32	8.13	32.19
No fertilizer				875					
300	160	25	8-4-2	1516	867	649	45.43	7.53	37.90
300	160		8-4-0	1358	858	500	35.00	6.93	28.07
300	320	50	8-8-4	1583	850	733	51.31	12.81	38.50
No fertilizer				842					
300	240	50	8-6-4	1492	865	627	43.89	10.47	33.42
225	160	50	6-4-4	1433	888	545	38.15	7.57	30.58
150	160	50	4-4-4	1417	911	506	35.42	7.00	28.42
No fertilizer				933					
No fertilizer				941					
600	320	100	8-4-4	2075	954	1121	78.47	16.25	62.21
900	480	150	8-4-4	2033	966	1067	74.69	24.39	50.30
1200	640	200	8-4-4	2075	979	1096	76.72	32.52	44.20
No fertilizer				992					