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AUBURN

**Local Fertilizer Experiments With Cotton in
North Alabama in 1912.**

BY

J. F. DUGGAR,
J. T. WILLIAMSON and
L. J. HAWLEY.

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LOCAL FERTILIZER EXPERIMENTS WITH COTTON IN NORTH ALABAMA IN 1912

BY

J. F. DUGGAR, J. T. WILLIAMSON, L. J. HAWLEY.

SUMMARY.

Bulletin No. 170 records the results of fertilizer experiments with cotton conducted by the Alabama Experiment Station in the counties of the northern half of Alabama in 1912.

In 14 out of 16 conclusive experiments, cotton seed meal was more effective than either acid phosphate or kainit.

In 7 experiments, phosphate was more effective than kainit; in 2 it was about equally as important as kainit, and in 3 tests, it was less effective than kainit, though needed; thus in 75 per cent. of these experiments, acid phosphate was needed to a greater or less extent.

In 5 experiments kainit was more important than phosphate, and in 2 instances it was about equally as effective as phosphate; that is, in 44 per cent. of these experiments, kainit was needed to a greater or less extent.

This table shows that as a rule the complete fertilizers (Plots 12, 10 and 9) were more profitable than fertilizers applied singly or in pairs. The complete fertilizers were also the most profitable applications in 1911 in North Alabama.

In the general average it was more effective and more profitable in both years to apply 100 pounds of kainit in a complete fertilizer (Plot 10) than to use 200 pounds of kainit (Plot 9).

The average of the conclusive experiments shows that 200 pounds of cotton seed meal applied before planting was in 1912 practically equal in effect to 100 pounds of nitrate of soda applied after the plants were six inches high.

The average results of the 16 experiments are shown in the table below:

Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Average increase over unfertilized plot; seed cotton per acre.	Average profit from fertilizer per acre.
	Lbs.		Lbs.	
1	200	C. S. Meal.....	226	\$6.06
2	240	Acid Phosphate	141	3.98
3	000	No fertilizer.....		
4	200	Kainit.....	75	1.62
5	200	C. S. Meal	284	6.68
	240	Acid Phosphate		
6	200	C. S. Meal	264	6.14
	200	Kainit.....		
7	000	No fertilizer.....		
8	240	Acid Phosphate	146	2.78
	200	Kainit		
9	200	C. S. Meal	346	7.75
	240	Acid Phosphate		
	200	Kainit.....		
10	200	C. S. Meal	353	8.73
	240	Acid Phosphate		
	100	Kainit.....		
11	000	No fertilizer.....		
12	240	Acid Phosphate	355	9.34
	100	Kainit.....		
	100	Nitrate of Soda(late)		

Introductory

The chief object of these local fertilizer experiments or soil tests has been to ascertain the best combination of fertilizer or fertilizers for cotton, growing on each of the principal soils of the northern half of Alabama; this is, in counties north of the Prairie Region.

The results recorded in this bulletin were obtained in fertilizer experiments conducted by funds provided by the Legislature of Alabama in February, 1911.

Local fertilizer tests constitute only one of many lines of experiments instituted in 1911 by the Alabama Experiment Station with the support of State funds.

Local fertilizer experiments as now conducted are made by farmers especially recommended as being men likely to take the necessary pains to secure accurate results. These experiments, located all over the State, are visited and supervised by representatives of the Experiment Station.

“What fertilizer does my soil need” is a question which can be answered only by repeated tests made on the same or similar soils, so that average results extending through several years may be obtained.

The reader should bear in mind that there are great numbers of different soils in Alabama, and that even the same soil would give different results in the same year, depending on how it had been cropped, fertilized, and cared for in the year or two immediately preceding the test. Patient repetition of these tests is necessary before we can positively answer the above question.

It is the purpose of the authors in later years to publish bulletins classifying the soils on which all these tests are made and drawing conclusions relative to the needs of each class of soils. However, before this can be safely done, these experiments must be repeated, so that the average results may teach clearly the fertilizer requirements of each distinct type of soil. Averaging the results obtained on dissimilar soils will not afford the desired information. Chemical analysis of the soil does not indicate what fertilizers are needed.

Other fertilizer tests in North Ala.—This bulletin does not contain the results of all the fertilizer experiments made in North Alabama in 1912. Those testing the effects of lime, acid phosphate versus ground rock phosphate, complete fertilizer experiments in which nitrate of soda was the carrier of nitrogen, etc., are reserved for publication in later years, because of insufficient funds for printing.

Small lots of carefully weighed and mixed fertilizers were supplied to each experimenter. Detailed instructions as to how to conduct the experiment and blank forms for reporting results were also furnished. Representatives of the Station inspected the experiments here published as often as practicable.

WEATHER CONDITIONS

The season of 1912 was especially unfavorable for conducting fertilizer experiments. This was an exceedingly wet year, especially in spring and summer.

The average rainfall in the part of Alabama covered by these

experiments is given below by months, according to data furnished by the Alabama Weather Service:

	Inches		Inches		Inches		Inches
Jan.	5.78	April	8.89	July	5.52	Oct.	2.81
Feb.	5.14	May	3.24	Aug.	5.36	Nov.	1.07
Mar.	9.98	June	5.58	Sept.	3.60	Dec.	

Doubtless, the heavy rains resulted in the leaching and wasting of the fertilizer on certain soils and plots.

In spite of these and other serious obstacles, the majority of the experiments afforded useful results. In nearly every test one or more fertilizer mixtures were decidedly profitable. If we would know the fertilizer requirements of our soils, tests must be made in unfavorable as well as favorable seasons.

In 1912 killing frost occurred early, that is on October 24 and November 3.

LOCATION OF EXPERIMENTS.

COUNTY	POST OFFICE	NAME	Page
Bibb	Centerville	John D. James	69-70
Bibb	Randolph	J. E. Perry	72-73
Blount	Oneonta	W. E. Lecroy	72
Blount	Oneonta	W. F. Tidwell	66-67-68
Calhoun	Alexandria	E. M. Cowden	72-73
Chambers	Cusseta	W. T. Edge	72
Cherokee	Cedar Bluff	Paul Bishop	65-66
Cherokee	Gaylesville	J. F. Westbrook	64-65
Clay	Lineville	J. F. Lester	72-73
Colbert	Tuscumbia	W. E. Hargett	71-74
Colbert	Tuscumbia	Geo. E. Harris	54-55
Coosa	Equality, R. No. 1	W. M. Blankenship	70-71
Cullman	Hanceville	A. W. Johnston	61-62
DeKalb	Ft. Payne	J. J. Sampley	72-74
Etowah	Gadsden, R. No. 3	T. A. Lewis	72-74
Franklin	Russellville	F. Dennis	71
Lamar	Sulligent	Jack Woods	72
Lauderdale	Florence	D. P. Underwood	51-52
Lawrence	Courtland	W. E. Hotchkiss	57-58
Lawrence	Town Creek	J. W. Terry	56-57
Limestone	Athens	8th Dist. Agr. School	55-56
Madison	New Hope	Charles T. Butler	71-74
Madison	Huntsville	G. E. Hoy	71-74
Marion	Boen Allen	W. P. Letson	52-53-54
Marshall	Boaz	J. R. Smith	62-63-64
Morgan	Hartselle	M. White	60-61
Morgan	New Decatur	L. B. Wyatt	71
Pickens	Reform	L. R. Hollingsworth	72-74
Pickens	Aliceville	E. Sanders	72-74
Randolph	Roanoke	R. E. Taylor	72-73
St. Clair	Asheville	Jenkins & Stevenson	72-73

Shelby	Montevallo	H. E. Butler	68-69
Talladega	Childersburg	W. Boaz	72-73
Talladega	Talladega	J. R. Weisenger	72
Tuscaloosa	Tuscaloosa	H. T. Burks	72
Walker	Cordova	G. L. Alexander	59-60
Winston	Natural Bridge	R. J. Mobley	72

The directions sent to each experimenter stated that the land employed for this test should be level and uniform, not manured in recent years, not in cowpeas the preceding year, and that it should be representative of large soil areas in its vicinity. The need of perfect uniformity and standard treatment for all plots (except as to kind of fertilizer used) was emphasized.

Fertilizers were applied in the usual manner—that is, drilled before planting, except nitrate of soda, which was directed to be applied when the plants were 6 to 10 inches high.

THE FERTILIZERS USED

The following prices are used, as representing approximately the the average cash price in local markets during the last few years:

	Per Ton
Acid Phosphate (16 per cent available)	\$14.00
Cotton seed meal	\$30.00
Kainit	\$14.00

Prices naturally vary in different localities. Any one can substitute the cost of fertilizers in his locality for the prices given above.

In each experiment three plots were left unfertilized, these being plots 3, 7, and 11. When these yields differed widely the experiment was classed as inconclusive. The increase on plots 4 to 6 is calculated on the assumption that the gradation in fertility is uniform from plots 3 to 7; likewise the increase is calculated for plots 8 to 10 inclusive.*

PRICE ASSUMED FOR SEED COTTON

The price assumed is \$18.00 per ton for seed, and 12 cents per pound for lint. This is equal to 4.6 cents per pound for seed cotton turning out $33\frac{1}{3}$ per cent of lint. Deducting $\frac{6}{100}$ cents per pound as the average cost of picking and ginning, and we have left 4 cents as the net value per pound of the increase of seed cotton due to fertilizers. This latter is the figure used in all financial calculations.

*For the standard method of calculation employed, see Alabama Station Bulletins 160 or 162.

Pounds per acre of fertilizers; nitrogen, phosphoric acid, and potash used and composition of each mixture.

Plot No.	FERTILIZERS		MIXTURE CONTAINS			COST OF FERTILIZERS	
	Amount per acre	KIND OF FERTILIZER	Nitrogen	†Available phosphoric Acid	Potash	Per ton	Per acre
1	Lbs.		Lbs.	Lbs.	Lbs.		
	200	Cotton seed meal -----	13.58	5.76	3.54	\$30.00	\$3.00
	<i>In 100 lbs. c. s. meal*</i> -----	6.79	2.88	1.77			
2	240	Acid phosphate -----		38.40		14.00	1.68
		<i>In 100 lbs. acid phos.</i> -----		16.00			
4	200	Kainit -----			24.60	14.00	1.40
		<i>In 100 lbs. Kainit</i> -----			12.30		
5	200	Cotton seed meal -----	13.58	44.16	3.54	21.27	4.68
	240	Acid phosphate -----					
		<i>In 100 lbs. above mixt.</i> -----	3.09	10.04	.80		
6	200	Cotton seed meal -----	13.58	5.76	28.14	22.00	4.40
	200	Kainit -----					
		<i>In 100 lbs. above mixt.</i> -----	3.39	1.44	7.03		
8	240	Acid phosphate -----				13.99	3.08
	200	Kainit -----					
		<i>In 100 lbs. above mixt.</i> -----		8.73	5.59		
9	200	Cotton seed meal -----	13.58	44.16	28.14	19.00	6.08
	240	Acid phosphate -----					
	200	Kainit -----					
		<i>In 100 lbs. above mixt.</i> -----	2.12	4.39	6.90		
10	200	Cotton seed meal -----	13.58	44.16	15.84	20.13	5.38
	240	Acid phosphate -----					
	100	Kainit -----					
		<i>In 100 lbs. above mixt.</i> -----	2.59	8.18	2.93		
12	240	Acid phosphate -----	14.00	16.00	12.30	22.17	4.88
	100	Kainit -----					
	100	Nitrate of soda -----					
		<i>In 100 lbs. above mixt.</i> -----	3.18	8.73	2.80		

*Average of many analysis.

†Counting all the phosphoric acid in cotton seed meal as available.

Those farmers who are more accustomed to the word ammonia than to the term nitrogen, can change the figures for nitrogen into their ammonia equivalents by multiplying by $1\frac{3}{4}$.

LAUDERDALE COUNTY, 6 MILES NORTH
OF FLORENCE

D. P. UNDERWOOD

Grey stiff loam, with yellow clay subsoil. Mapped as "Clarksville silt loam or barrens."

This land has been in cultivation 18 years. The preceding crop was cotton. No damage was done by insects or rust. The stand was uniform except on Plots 9 and 10 where it was somewhat deficient.

The largest profit, \$11.90 per acre or 221 per cent on the investment in fertilizers, was afforded by Plot 10 on which was used a complete fertilizer that included 100 pounds of kainit per acre. The second largest profit, \$9.56 per acre, was made on Plot 5, fertilized with cotton seed meal and acid phosphate.

The average increase in pounds of seed cotton per acre due to cotton seed meal was 196 pounds; to acid phosphate, 123 pounds; and to the full amount of kainit (200 pounds), only 13 pounds of seed cotton per acre.

We may safely conclude from this experiment and from a similar one conducted by Mr. J. F. Underwood on the same character of soil in 1911 that this grade of so-called barrens soil is very responsive to cotton seed meal, fairly responsive to acid phosphate, and that it requires but a small amount of potash.

In both years the complete fertilizer, in which only 100 pounds of kainit per acre was used (Plot 10), was more effective and more profitable than the complete fertilizer containing 200 pounds of kainit (Plot 9). The composition of the fertilizer on Plot 10 which gave such favorable results was approximately the same as what the farmer usually buys as an 8-3-3 guano.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	248 lbs.
To acid phosphate plot.....	188 lbs.
To kainit plot.....	164 lbs.
To acid phosphate and kainit plot.....	184 lbs.
<i>Average increase with cotton seed meal.....</i>	196 lbs.

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	168 lbs.
To cotton seed meal plot.....	108 lbs.

To kainit plot.....	98 lbs.
To cotton seed meal and kainit plot.....	118 lbs.
<i>Average increase with acid phosphate</i>	123 lbs.
Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	70 lbs.
To cotton seed meal plot.....	—14 lbs.
To acid phosphate plot.....	00 lbs.
To cotton seed meal and acid phosphate plot.....	—4 lbs.
<i>Average increase with kainit</i>	13 lbs.
Increase from use of cotton seed meal.....	184 lbs.
Increase from use of nitrate of soda.....	64 lbs.
<i>Cotton seed meal better by</i>	120 lbs.

Experiments in Lauderdale and Marion Counties.

			FLORENCE			GLEN ALLEN		
Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Yield seed cotton per acre		Profit from fertilizer	Yield seed cotton per acre		Profit from fertilizer
			Yield seed cotton per acre	Increase over unfertilized plot		Yield seed cotton per acre	Increase over unfertilized plot	
1	200	C. S. Meal	Lbs. 560	Lbs. 248	\$6.92	Lbs. 540	Lbs. 80	\$ 0.20
2	240	Acid Phosphate	480	168	5.04	784	324	11.28
3	000	No fertilizer	312			460		
4	200	Kainit	376	70	1.40	520	55	0.80
5	200	C. S. Meal	656	356	9.56	1076	606	19.56
	240	Acid Phosphate						
6	200	C. S. Meal	528	234	4.96	640	165	2.20
	200	Kainit						
7	000	No fertilizer	288			480		
8	240	Acid Phosphate	440	168	3.64	880	408	13.24
	200	Kainit						
9	200	C. S. Meal	608	352	8.00	1016	552	16.00
	240	Acid Phosphate						
10	200	C. S. Meal	672	432	11.90	916	460	13.02
	240	Acid Phosphate						
11	100	Kainit	224			448		
12	000	No fertilizer	536	312	7.60	1060	612	19.60
	240	Acid Phosphate						
	100	Nitrate of Soda						

MARION COUNTY, 6 MILES NORTHEAST
OF GLEN ALLEN

W. P. LETSON

Light colored sandy soil, with red subsoil

This land has been in cultivation about 10 years. The stand was good except on Plots 1 and 3. No damage from rust or insects was reported. The preceding crop was oats.

The largest profits were afforded by Plots 5 and 12. The former, fertilized with cotton seed meal and acid phosphate, afforded a profit of \$19.56 per acre, or 418 per cent on the investment in fertilizers. Plot 12, which received a complete fertilizer containing acid phosphate and a half ration of kainit, and also nitrate of soda applied after growth began, showed a profit of \$19.60 per acre or 400 per cent on the investment in fertilizers.

Apparently kainit in the complete fertilizer was of no value, although when applied alone or with either one of the fertilizers it slightly increased the yield.

The average increase in pounds of seed cotton per acre due to cotton seed meal was 154 pounds; to acid phosphate, 398 pounds; and to the full amount of kainit, only 43 pounds. The material chiefly needed by this soil was acid phosphate, which however, required to be supplemented by some form of nitrogen.

Nitrate of soda made a better yield than cotton seed meal by 152 pounds.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	80 lbs.
To acid phosphate plot.....	282 lbs.
To kainit plot.....	110 lbs.
To acid phosphate and kainit plot.....	144 lbs.
<i>Average increase with cotton seed meal.....</i>	<u>154 lbs.</u>

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	324 lbs.
To cotton seed meal plot.....	526 lbs.
To kainit plot.....	353 lbs.
To cotton seed meal and kainit plot.....	387 lbs.
<i>Average increase with acid phosphate.....</i>	<u>398 lbs.</u>

Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	55 lbs.
To cotton seed meal plot.....	85 lbs.
To acid phosphate plot.....	84 lbs.
To cotton seed meal and acid phosphate plot.....	—54 lbs.
<i>Average increase with kainit.....</i>	43 lbs.
Increase from use of cotton seed meal.....	144 lbs.
Increase from use of nitrate of soda.....	296 lbs.
<i>Nitrate of soda better than cotton seed meal by.....</i>	152 lbs.

COLBERT COUNTY, 2 MILES EAST OF TUSCUMBIA

G. H. HARRIS

Dark reddish clay loam, valley soil; red clay subsoil.

This experiment was located on the same plots where a similar one was conducted in 1911. This typical Tennessee Valley red land has been long in cultivation. No damage from insects or from rust was apparent.

The largest profit, \$6.96 per acre or 143 per cent on the investment in fertilizers, was obtained on Plot 12, where a complete fertilizer containing nitrate of soda was used. In a complete fertilizer it was more effective and more profitable to use 100 pounds (Plot 10) than 200 pounds (Plot 9) of kainit per acre.

Evidently this soil needed in 1912 a complete fertilizer with but little kainit.

Cotton seed meal and nitrate of soda were equally effective and profitable.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot.....	152 lbs.
To acid phosphate plot.....	192 lbs.
To kainit plot.....	184 lbs.
To acid phosphate and kainit plot.....	170 lbs.
<i>Averages increase with cotton seed meal.....</i>	175 lbs.

Increase of seed cotton per acre when acid phosphate was added:	
To unfertilized plot.....	72 lbs.
To cotton seed meal plot.....	112 lbs.
To kainit plot.....	34 lbs.
To cotton seed meal and kainit plot.....	20 lbs.
<i>Average increase with acid phosphate.....</i>	60 lbs.

Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	16 lbs.
To cotton seed meal plot.....	48 lbs.
To acid phosphate plot.....	—22 lbs.
To cotton seed meal and acid phosphate plot.....	—44 lbs.
<i>Average increase with kainit.....</i>	1 lb.

Increase from use of cotton seed meal.....	170 lbs.
Increase from use of nitrate of soda.....	172 lbs.
<i>Nitrate of soda better than cotton seed meal by.....</i>	2 lbs.

Experiments in Colbert and Limestone Counties.

Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	TUSCUMBIA			ATHENS		
			Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer	Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer
1	200	C. S. Meal.....	Lbs. 504	Lbs. 152	\$3.08	Lbs. 776	Lbs. 272	\$7.88
2	240	Acid Phosphate ..	424	72	1.20	672	168	5.04
3	000	No fertilizer.....	352	-----	-----	504	-----	-----
4	200	Kainit.....	368	16	-0.76	560	56	0.84
5	200	C. S. Meal.....	616	264	5.88	704	200	3.32
	240	Acid Phosphate ..						
6	200	C. S. Meal.....	552	200	3.60	800	296	7.44
	200	Kainit.....						
7	000	No fertilizer.....	352	-----	-----	504	-----	-----
8	240	Acid Phosphate ..	424	50	-1.08	720	162	3.40
	200	Kainit.....						
9	200	C. S. Meal.....	616	220	2.72	936	324	6.88
	240	Acid Phosphate ..						
10	200	Kainit.....	712	294	6.38	872	206	2.86
	100	C. S. Meal.....						
11	000	No fertilizer.....	440	-----	-----	720	-----	-----
12	240	Acid Phosphate ..	736	296	6.96	960	240	4.72
	100	Kainit.....						
	100	Nitrate of Soda..						

**LIMESTONE COUNTY, 1 MILE SOUTHEAST
OF ATHENS**

**EIGHTH DISTRICT AGRICULTURAL SCHOOL
(W. R. NETTLES, Agriculturist.)**

Dark red soil with red clay subsoil

This is a stiff upland soil, which has been in cultivation many years. No damage from worms or other insects was reported, but rust did some injury. The stand was good.

The complete fertilizer on Plot 9 was the most effective combination, while cotton seed meal was the most effective and most profitable of the single constituents.

The average increase in pounds of seed cotton per acre was for cotton seed meal, 185 pounds; for acid phosphate, 58 pounds; and for kainit, 45 pounds.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot.....	272 lbs.
To acid phosphate plot.....	32 lbs.
To kainit plot.....	240 lbs.
To acid phosphate and kainit plot.....	162 lbs.
<i>Average increase with cotton seed meal.....</i>	185 lbs.
Increase of seed cotton per acre when acid phosphate was added:	
To unfertilized plot.....	168 lbs.
To cotton seed meal plot.....	—72 lbs.
To kainit plot.....	106 lbs.
To cotton seed meal and kainit plot.....	28 lbs.
<i>Average increase with acid phosphate.....</i>	58 lbs.
Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	56 lbs.
To cotton seed meal plot.....	24 lbs.
To acid phosphate plot.....	—6 lbs.
To cotton seed meal and acid phosphate plot.....	124 lbs.
<i>Average increase with kainit.....</i>	45 lbs.
Increase from use of cotton seed meal.....	162 lbs.
Increase from use of nitrate of soda.....	196 lbs.
<i>Nitrate of soda better than cotton seed meal by.....</i>	34 lbs.

LAWRENCE COUNTY, 2 MILES SOUTHEAST OF TOWN CREEK

J. W. TERRY

Light reddish soil with red clay subsoil

This land has been in cotton for the last three years and perhaps longer. It has been long in cultivation. Some damage was done by rust. The stand was good.

Mr. Terry, having acted as a substitute for the party who had arranged to conduct the test, was not able to apply the fertilizer until June, when it was used as a side application.

The largest profit, \$7.04 per acre, or 116 per cent on the investment in fertilizers, was obtained on Plot 9, where a complete fertilizer was employed. However, an almost equal profit was made on Plot 6, receiving only cotton seed meal and kainit.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot.....	144 lbs.
To acid phosphate plot.....	24 lbs.
To kainit plot.....	168 lbs.
To acid phosphate and kainit plot.....	196 lbs.
<i>Average increase with cotton seed meal.....</i>	133 lbs.

LAWRENCE COUNTY, 2½ MILES SOUTHEAST
OF COURTLAND

W. E. HOTCHKISS

Light reddish soil, with yellowish subsoil

This land had been long in cultivation.

The greatest profit, \$12.48 per acre, or 284 per cent on the investment in fertilizers, was obtained from Plot 6, where a mixture of cotton seed meal and kainit was used. Next in profit were the complete fertilizers on Plots 9 and 10. Indeed, every application of fertilizer was profitable except when meal or phosphate was applied separately.

The average increase attributable to cotton seed meal was 174 pounds of seed cotton per acre; to acid phosphate, 74 pounds; and to kainit, 192 pounds. Cotton seed meal was better than nitrate of soda in this test.

In most other tests made on soils of the Tennessee Valley acid phosphate, as well as some form of nitrogen, has proved profitable; the results with potash have been variable. The greater number indicate that not less than 200 pounds per acre is needed.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	64 lbs.
To acid phosphate plot.....	196 lbs.
To kainit plot.....	316 lbs.
To acid phosphate and kainit plot.....	118 lbs.
<i>Average increase with cotton seed meal.....</i>	174 lbs.

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	48 lbs.
To cotton seed meal plot.....	180 lbs.
To kainit plot.....	132 lbs.
To cotton seed meal and kainit plot.....	—66 lbs.
<i>Average increase with acid phosphate.....</i>	74 lbs.

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	106 lbs.
To cotton seed meal plot.....	358 lbs.
To acid phosphate plot.....	190 lbs.
To cotton seed meal and acid phosphate plot.....	112 lbs.
<i>Average increase with kainit.....</i>	192 lbs.

Increase from use of different quantities of kainit:

To use of 200 pounds kainit.....	112 lbs.
To use of 100 pounds kainit.....	70 lbs.

Increase from use of cotton seed meal..... 118 lbs.

Increase from use of nitrate of soda..... 52 lbs.

Cotton seed meal better by..... 66 lbs

WALKER COUNTY, 3 MILES SOUTH OF CORDOVA

G. L. ALEXANDER

Sandy loam soil, with red clay subsoil

This experiment was conducted on land which had been in cultivation about 40 years. It is a poor upland soil. No damage was done by rust or insects.

The largest profit per acre, \$12.70 or 239 per cent on the investment in fertilizers, resulted from an application of a complete fertilizer containing a half ration of kainit, Plot 10.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	256 lbs..
To acid phosphate plot.....	216 lbs..
To kainit plot.....	328 lbs..
To acid phosphate and kainit plot.....	268 lbs..
<i>Average increase with cotton seed meal.....</i>	<i>267 lbs..</i>

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	112 lbs..
To cotton seed meal plot.....	72 lbs..
To kainit plot.....	104 lbs..
To cotton seed meal and kainit plot.....	44 lbs..
<i>Average increase with acid phosphate.....</i>	<i>83 lbs..</i>

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	-12 lbs..
To cotton seed meal plot.....	60 lbs..
To acid phosphate plot.....	-20 lbs..
To cotton seed meal and acid phosphate plot.....	32 lbs..
<i>Average increase with kainit.....</i>	<i>15 lbs..</i>

Increase from use of different quantities of kainit:

To use of 200 pounds kainit.....	32 lbs..
To use of 100 pounds kainit.....	124 lbs..

Increase from use of cotton seed meal..... 268 lbs..

Increase from use of nitrate of soda..... 232 lbs..

Cotton seed meal better by..... 36 lbs..

Experiments in Walker and Morgan Counties.

Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	CORDOVA			HARTSELLE		
			Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer	Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer
1	200	C. S. Meal.....	Lbs. 816	Lbs. 256	\$ 7.24	Lbs. 472	Lbs. 200	\$5.00
2	240	Acid Phosphate ..	672	112	2.80	296	24	-0.72
3	000	No fertilizer.....	560			272		
4	200	Kainit.....	544	-12	-1.88	296	12	-0.92
5	200	C. S. Meal.....	880	328	8.44	504	208	3.64
	240	Acid Phosphate ..						
6	200	C. S. Meal.....	864	316	8.24	488	280	6.80
	230	Kainit.....						
7	000	No fertilizer.....	544			320		
8	240	Acid Phosphate ..	624	92	0.60	408	72	-0.20
	200	Kainit.....						
9	200	C. S. Meal.....	880	360	8.32	584	232	3.20
	240	Acid Phosphate ..						
	200	Kainit.....						
10	200	C. S. Meal.....	960	452	12.70	640	272	5.50
	240	Acid Phosphate ..						
11	100	Kainit.....	496			384		
	000	No fertilizer.....						
	240	Acid Phosphate ..						
12	100	Kainit.....	912	416	11.76	568	184	2.48
	100	Nitrate of Soda..						

MORGAN COUNTY, $\frac{3}{4}$ MILES EAST OF HARTSELLE
M. WHITE

Grey sandy loam, with yellow clay subsoil

This land has been in cultivation about 20 years. The preceding crop was cotton. The stand was good. No injury is recorded from insects or rust.

The largest profit per acre, \$6.80, or 155 per cent on the investment in fertilizers, was obtained on Plot 6 fertilized with cotton seed meal and kainit. This was closely followed by the profit from the use of cotton seed meal alone, \$5.00 per acre, and by the profit on Plot 10, which received a complete fertilizer containing a half ration of kainit.

The average increase attributable to cotton seed meal was 206 pounds; to acid phosphate, only 11 pounds; and to kainit, only 24 pounds.

Cotton seed meal was more advantageous than nitrate of soda.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot.....	200 lbs.
To acid phosphate plot.....	184 lbs.
To kainit plot.....	268 lbs.
To acid phosphate and kainit plot.....	160 lbs.
<i>Average increase with cotton seed meal.....</i>	206 lbs.
Increase of seed cotton per acre when acid phosphate was added:	
To unfertilized plot.....	24 lbs.
To cotton seed meal plot.....	8 lbs.
To kainit plot.....	60 lbs.
To cotton seed meal and kainit plot.....	—48 lbs.
<i>Average increase with acid phosphate.....</i>	11 lbs.
Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	12 lbs.
To cotton seed meal plot.....	80 lbs.
To acid phosphate plot.....	48 lbs.
To cotton seed meal and acid phosphate plot.....	24 lbs.
<i>Average increase with kainit.....</i>	41 lbs.
Increase from use of different quantities of kainit:	
To use of 200 pounds kainit.....	24 lbs.
To use of 100 pounds kainit.....	64 lbs.
Increase from use of cotton seed meal.....	160 lbs.
Increase from use of nitrate of soda.....	72 lbs.
<i>Cotton seed meal better by.....</i>	88 lbs.

CULLMAN COUNTY, 5 MILES EAST OF HANCEVILLE

A. W. JOHNSTON

Gray sandy soil, with yellow subsoil

This is an upland soil of medium fertility. Some damage was done by rust on Plot 5.

The largest profit per acre was afforded by Plot 12, fertilized with a complete fertilizer containing nitrate of soda applied late. This was \$10.16 per acre, or 209 per cent on the investment in fertilizers. The next largest profits were also made by the plots receiving complete fertilizers (Plots 9 and 10).

The average increase in pounds of seed cotton per acre was, for cotton seed meal, 154 pounds; for acid phosphate, 60 pounds; and for kainit 114 pounds.

Evidently this soil needed a complete fertilizer.

Increase of seed cotton per acre when cotton seed meal was added:		
To unfertilized plot.....	92 lbs.	
To acid phosphate plot.....	348 lbs.	
To kainit plot.....	80 lbs.	
To acid phosphate and kainit plot.....	194 lbs.	
<i>Average increase with cotton seed meal</i>		154 lbs.
Increase of seed cotton per acre when acid phosphate was added:		
To unfertilized plot.....	—44 lbs.	
To cotton seed meal plot.....	212 lbs.	
To kainit plot.....	—22 lbs.	
To cotton seed meal and kainit plot	92 lbs.	
<i>Average increase with acid phosphate</i>		60 lbs.
Increase of seed cotton per acre when kainit was added:		
To unfertilized plot.....	144 lbs.	
To cotton seed meal plot.....	132 lbs.	
To acid phosphate plot.....	166 lbs.	
To cotton seed meal and acid phosphate plot.....	12 lbs.	
<i>Average increase with kainit</i>		114 lbs.
Increase from use of cotton seed meal.....		194 lbs.
Increase from use of nitrate of soda.....		216 lbs.
<i>Nitrate of soda better than cotton seed meal by</i>		22 lbs.

Experiments in Cullman and Marshall Counties.

			HANCEVILLE			BOAZ		
Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Yield seed cot-	Increase over	Profit from fertilizer	Yield seed cot-	Increase over	Profit from fertilizer
			ton per acre	unfertilized plot		ton per acre	unfertilized plot	
			Lbs.	Lbs.	\$	Lbs.	Lbs.	\$
1	200	C. S. Meal.....	420	92	0.68	852	364	11.56
2	240	Acid Phosphate ..	284	—44	3.44	744	256	8.56
3	000	No fertilizer.....	328			488		
4	200	Kainit.....	456	144	4.36	612	104	2.76
5	200	C. S. Meal.....	600	304	7.48	792	264	5.88
	240	Acid Phosphate.....						
6	200	C. S. Meal.....	504	224	4.56	828	280	6.80
	200	Kainit.....						
7	000	No fertilizer.....	264			568		
8	240	Acid Phosphate.....	396	122	1.80	720	188	4.44
	200	Kainit.....						
9	200	C. S. Meal.....	600	316	6.56	972	476	12.96
	240	Acid Phosphate.....						
10	200	C. S. Meal.....	648	354	8.78	852	392	10.30
	240	Acid Phosphate.....						
11	100	Kainit.....	304			424		
	000	No fertilizer.....						
12	240	Acid Phosphate.....	680	376	10.16	944	520	15.92
	100	Kainit.....						
	100	Nitrate of Soda.....						

MARSHALL COUNTY, 6 MILES SOUTHWEST
OF BOAZ

J. ROBT. SMITH

Light colored sandy soil, with yellowish subsoil

This experiment was conducted on an upland soil which has been in cultivation 20 to 25 years. The preceding crop was corn. No damage is reported from rust or insects. The stand was good.

The largest profit, \$15.92 per acre, or 327 per cent on the investment in fertilizers was made on Plot 12, where a complete fertilizer containing nitrate of soda was used. The next largest profit was made on Plot 9, which was \$12.96, or 213 per cent on the investment in fertilizers. Every fertilizer made a profit, whether used singly or in a combination.

The average increase in pounds of seed cotton per acre due to cotton seed meal was 209 pounds; to acid phosphate, 109 pounds; and to kainit, 41 pounds. However, in the complete fertilizer each of the three fertilizer constituents was more useful than is indicated by these average figures.

The use of 200 pounds of kainit per acre was more effective than was 100 pounds. Nitrate of soda was more useful than cotton seed meal.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot	364 lbs.
To acid phosphate plot	8 lbs.
To kainit plot	176 lbs.
To acid phosphate and kainit plot	288 lbs.
<i>Average increase with cotton seed meal</i>	<u>209 lbs.</u>

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot	256 lbs.
To cotton seed meal plot	—100 lbs.
To kainit plot	84 lbs.
To cotton seed meal and kainit plot	196 lbs.
<i>Average increase with acid phosphate</i>	<u>109 lbs.</u>

Increase of seed cotton per acre when kainit was added:

To unfertilized plot	104 lbs.
To cotton seed meal plot	—84 lbs.
To acid phosphate plot	—68 lbs.
To cotton seed meal and acid phosphate plot	212 lbs.
<i>Average increase with kainit</i>	<u>41 lbs.</u>

Increase from use of different quantities of kainit:	
To use of 200 pounds kainit	212 lbs.
To use of 100 pounds kainit	128 lbs.
Increase from use of cotton seed meal (Plot 9).....	
Increase from use of nitrate of soda.....	288 lbs.
Nitrate of soda better than cotton seed meal by	416 lbs.
	128 lbs.

CHEROKEE COUNTY, 6 MILES NORTH OF LAW-
RENCE, NEAR GAYLESVILLE

J. F. WESTBROOK

Gray sandy loam, with red clay subsoil

This is an upland soil which has been long in cultivation—60 years or longer. The original forest trees were oak and short leaf pine. Corn was the preceding crop, with cotton the two years before that. The stand was perfect on all plots. No damage was done by insects or rust.

The largest profit, \$13.36 per acre, or 274 per cent on the investment in fertilizers, was afforded by Plot 12 on which a complete fertilizer containing nitrate of soda was applied. Of the three separate fertilizer constituents, cotton seed meal was the most effective.

The average increase in pounds of seed cotton per acre due to cotton seed meal was 223 pounds; to acid phosphate, 98 pounds and to kainit, 28 pounds.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot	304 lbs.
To acid phosphate plot.....	124 lbs.
To kainit plot.....	316 lbs.
To acid phosphate and kainit plot.....	148 lbs.
<i>Average increase with cotton seed meal.....</i>	<u>223 lbs.</u>
Increase of seed cotton per acre when acid phosphate was added:	
To unfertilized plot.....	248 lbs.
To cotton seed meal plot.....	68 lbs.
To kainit plot.....	122 lbs.
To cotton seed meal and kainit plot	<u>46 lbs.</u>
<i>Average increase with acid phosphate.....</i>	<u>98 lbs.</u>
Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	26 lbs.
To cotton seed meal plot.....	38 lbs.

To acid phosphate plot.....	—100 lbs.
To cotton seed meal and acid phosphate plot.....	—76 lbs.
<i>Average increase with kainit.....</i>	<i>—28 lbs.</i>
Increase from use of cotton seed meal.....	148 lbs.
Increase from use of nitrate of soda.....	280 lbs.
<i>Nitrate of soda better than cotton seed meal by.....</i>	<i>132 lbs.</i>

Experiments in Cherokee County.

			GAYLESVILLE			CEDAR BLUFF		
Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Yield seed cot-	Increase over	Profit from fertilizer	Yield seed cot-	Increase over	Profit from fertilizer
			ton per acre	unfertilized plot		ton per acre	unfertilized plot	
			Lbs.	Lbs.	\$	Lbs.	Lbs.	\$
1	200	C. S. Meal.....	744	304	9.16	552	248	6.92
2	240	Acid Phosphate ..	688	248	8.24	416	112	2.80
3	000	No fertilizer.....	440	—	—	304	—	—
4	200	Kainit.....	488	26	0.36	416	108	2.92
5	200	C. S. Meal.....	856	372	10.20	624	312	7.80
	240	Acid Phosphate }						
6	200	C. S. Meal.....	848	342	9.28	464	148	1.52
	200	Kainit.....						
7	000	No fertilizer.....	528	—	—	320	—	—
8	240	Acid Phosphate }	656	148	2.84	416	118	1.64
	200	Kainit.....						
9	200	C. S. Meal.....	784	296	5.76	560	284	5.28
	240	Acid Phosphate }						
10	200	C. S. Meal.....	792	324	7.58	544	290	6.22
	240	Acid Phosphate }						
11	100	Kainit.....	448	—	—	232	—	—
	000	No fertilizer.....						
12	240	Acid Phosphate }	904	456	13.36	456	224	4.08
	100	Kainit.....						
	100	Nitrate of Soda.....						

CHEROKEE COUNTY, 1½ MILES SOUTHEAST
OF CEDAR BLUFF

PAUL BISHOP ON THE FARM OF
D. N. WILLIAMSON

Dark grey loam soil, with red clay subsoil

The land on which this experiment was conducted has been in cultivation more than 75 years. The preceding crop was cotton. It is not subject to any special disease. No damage was reported

from worms or other insect pests. The stand was poor; a falling off in the stand was especially noted on the unfertilized plots; also, on plots 6, 9, 10 and 12.

The largest profit, \$7.80 per acre, or 145 per cent on the investment in fertilizers, was obtained on Plot 5 fertilized with 200 pounds cotton seed meal and 240 pounds of acid phosphate. Apparently potash was not needed on this soil in 1912.

The average increase in pounds of seed cotton per acre was, for cotton seed meal, 139 pounds; for acid phosphate, 81 pounds; while with kainit there was on the average a loss of 4 pounds per acre.

Cotton seed meal applied before planting was slightly better than nitrate of soda applied when plants were about six inches high.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	248 lbs.
To acid phosphate plot.....	100 lbs.
To kainit plot.....	40 lbs.
To acid phosphate and kainit plot.....	166 lbs.
<i>Average increase with cotton seed meal</i>	139 lbs.

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	112 lbs.
To cotton seed meal plot.....	64 lbs.
To kainit plot.....	10 lbs.
To cotton seed meal and kainit plot	136 lbs.
<i>Average increase with acid phosphate</i>	81 lbs.

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	108 lbs.
To cotton seed meal plot.....	100 lbs.
To acid phosphate plot.....	6 lbs.
To cotton seed meal and acid phosphate plot	28 lbs.
<i>Average increase with kainit</i>	4 lbs.

Increase from use of cotton seed meal..... 166 lbs

Increase from use of nitrate of soda..... 100 lbs.

Cotton seed meal better by..... 66 lbs.

BLOUNT COUNTY, 6 MILES WEST OF ONEONTA

W. F. TIDWELL

Gray gravelly loam soil, with silt and stone subsoil

This land has been in cultivation for more than 25 years. There was no damage from rust or insects. Exactly the same number of plants was left on each plot.

The greatest profit, \$16.54 per acre, or 302 per cent on the in-

vestment in fertilizers, was obtained from the application of a complete fertilizer containing a half ration of kainit (Plot 10). This plot also gave the largest profit in an experiment which Mr. Tidwell conducted on similar land in 1911.

The average increase in pounds of seed cotton per acre was 223 pounds for cotton seed meal; 91 pounds for acid phosphate; and there was an average loss of 9 pounds per acre where 200 pounds of kainit per acre was used. One hundred pounds of kainit was advantageous in the complete fertilizer.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	480 lbs.
To acid phosphate plot.....	120 lbs.
To kainit plot.....	152 lbs.
To acid phosphate and kainit plot.....	140 lbs.
<i>Average increase with cotton seed meal.....</i>	<u>223 lbs.</u>

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	288 lbs.
To cotton seed meal plot.....	-72 lbs.
To kainit plot.....	80 lbs.
To cotton seed meal and kainit plot.....	68 lbs.
<i>Average increase with acid phosphate.....</i>	<u>91 lbs.</u>

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	172 lbs.
To cotton seed meal plot.....	-156 lbs.
To acid phosphate plot.....	-36 lbs.
To cotton seed meal and acid phosphate plot.....	16 lbs.
<i>Average increase with kainit.....</i>	<u>-9 lbs.</u>

Experiments in Blount and Shelby Counties.

			ONEONTA			MONTEVALLO		
Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer	Yield seed cotton per acre	Increase over unfertilized plot	Profit from Fertilizer
			Lbs.	Lbs.		Lbs.	Lbs.	
1	200	C. S. Meal.....	1168	480	16.20	576	64	\$-0.44
2	240	Acid Phosphate.....	976	288	9.84	544	32	-0.40
3	000	No fertilizer.....	688	-----	-----	512	-----	-----
4	200	Kainit.....	864	172	5.48	560	60	1.00
5	200	C. S. Meal.....	1104	408	11.64	592	104	-0.42
	240	Acid Phosphate.....						
6	200	C. S. Meal.....	1024	324	8.56	656	180	2.80
	200	Kainit.....						
7	000	No fertilizer.....	704	-----	-----	464	-----	-----
8	240	Acid Phosphate.....	976	252	7.00	464	8	-2.76
	200	Kainit.....						
9	200	C. S. Meal.....	1136	392	9.60	688	240	3.52
	240	Acid Phosphate.....						
10	200	C. S. Meal.....	1312	548	16.54	560	120	-0.58
	240	Acid Phosphate.....						
11	100	Kainit.....	784	-----	-----	432	-----	-----
12	000	No fertilizer.....	1168	384	10.48	656	224	4.08
	240	Acid Phosphate.....						
	100	Kainit.....						
	100	Nitrate of Soda.....						

SHELBY COUNTY, 1 MILE NORTHEAST
OF MONTEVALLO

H. E. BUTLER

Red clay soil

This land has been in cultivation 12 years. The preceding crop was cotton. No notes on stand or insect damage were reported. The early frost caught this crop with a large number of green bolls.

The largest profit, \$4.08 per acre, or 82 per cent on the investment in fertilizers, was obtained on Plot 12, on which a complete fertilizer containing nitrate of soda was used.

Increase of seed cotton per acre when cotton seed meal was added:

To unfertilized plot.....	64 lbs.
To acid phosphate plot.....	72 lbs.

To kainit plot.....	120 lbs.
To acid phosphate and kainit plot.....	232 lbs.
<i>Average increase with cotton seed meal</i>	122 lbs.
Increase of seed cotton per acre when acid phosphate was added:	
To unfertilized plot.....	32 lbs.
To cotton seed meal plot.....	40 lbs.
To kainit plot.....	52 lbs.
To cotton seed meal and kainit plot.....	60 lbs.
<i>Average increase with acid phosphate</i>	20 lbs.
Increase of seed cotton per acre when kainit was added:	
To unfertilized plot.....	60 lbs.
To cotton seed meal plot.....	116 lbs.
To acid phosphate plot.....	24 lbs.
To cotton seed meal and acid phosphate plot.....	136 lbs.
<i>Average increase with kainit</i>	72 lbs.
Increase from use of different quantities of kainit	
To use of 200 pounds kainit.....	136 lbs.
To use of 100 pounds kainit.....	16 lbs.
Increase from use of cotton seed meal (Plot 9).....	232 lbs.
Increase from use of nitrate of soda.....	336 lbs.
<i>Nitrate of soda better than cotton seed meal by</i>	104 lbs.

BIBB COUNTY, $\frac{1}{4}$ MILE WEST OF BRENT

J. D. JAMES

Red clay loam, with red subsoil

This experiment was conducted on land which has been in cultivation for 75 or more years. The preceding crop was corn and cow peas. The stand was good. There was no notable damage by rust or insects.

The largest profit, \$15.26 per acre, or 284 per cent on the investment in fertilizers, was made by a complete fertilizer consisting of 200 pounds of cotton seed meal, 200 pounds of acid phosphate and 100 pounds of kainit. This was closely followed by profits of \$14.08 and \$13.68 on the other two plots which received complete fertilizers (Plots 9 and 12).

Of the separate fertilizer constituents cotton seed meal was the most effective and profitable, whether applied alone or in combination with phosphate and kainit. The average increase in pounds of seed cotton per acre was, for cotton seed meal, 231 pounds; for acid phosphate, 55 pounds; and for kainit, 83 pounds.

One hundred pounds of kainit was fully as effective as 200 pounds in a complete fertilizer. The increase from cotton seed meal was greater by 52 pounds per acre than from nitrate of soda.

Increase of seed cotton per acre when cotton seed meal was added:	
To unfertilized plot.....	344 lbs.
To acid phosphate plot.....	8 lbs.
To kainit plot.....	184 lbs.
To acid phosphate and kainit plot.....	388 lbs.
<i>Average increase with cotton seed meal</i>	231 lbs.

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	168 lbs.
To cotton seed meal plot.....	—168 lbs.
To kainit plot.....	8 lbs.
To cotton seed meal and kainit plot.....	212 lbs.
<i>Average increase with acid phosphate.....</i>	<i>55 lbs.</i>

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	108 lbs.
To cotton seed meal plot.....	—52 lbs.
To acid phosphate plot.....	—52 lbs.
To cotton seed meal and acid phosphate plot.....	328 lbs.
<i>Average increase with kainit.....</i>	<i>83 lbs</i>

Increase from use of different quantities of kainit:

To use of 200 pounds kainit.....	328 lbs.
To use of 100 pounds kainit.....	340 lbs.
Increase from use of cotton seed meal (Plot 9).....	388 lbs.
Increase from use of nitrate of soda.....	336 lbs.
<i>Cotton seed meal better by.....</i>	<i>52 lbs.</i>

Experiments in Bibb and Coosa Counties.

			BRENT			EQUALITY		
Plot No.	Amt. fertilizer per acre	KIND OF FERTILIZER	Yield seed cotton per acre	Increase over unfertilized plot	Profit from Fertilizer	Yield seed cotton per acre	Increase over unfertilized plot	Profit from fertilizer
			Lbs.	Lbs.	\$10.76	Lbs.	Lbs.	
1	200	C. S. Meal.....	952	344		768	312	\$9.48
2	240	Acid Phosphate.....	776	168	5.04	632	176	5.36
3	000	No fertilizer.....	608			456		
4	200	Kainit.....	736	108	2.92	520	82	1.88
5	200	C. S. Meal.....	824	176	2.36	680	260	5.72
	240	Acid Phosphate.....						
6	200	C. S. Meal.....	960	292	7.28	648	246	5.44
	200	Kainit.....						
7	000	No fertilizer.....	688			384		
8	240	Acid Phosphate.....	808	116	1.56	456	70	—0.28
	200	Kainit.....						
9	200	C. S. Meal.....	1200	504	14.08	688	300	5.92
	240	Acid Phosphate.....						
10	000	C. S. Meal.....	1216	516	15.26	856	466	3.26
	240	Acid Phosphate.....						
11	100	Kainit.....	704			392		
	000	No fertilizer.....						
12	240	Acid Phosphate.....	1168	464	13.68	768	376	10.16
	100	Kainit.....						
	100	Nitrate of Soda.....						

COOSA COUNTY, 16 MILES SOUTH OF ALEXAN-
DER CITY—NEAR EQUALITY

W. M. BLANKENSHIP

Grey soil, with reddish subsoil

This land has been in cultivation for 75 years. The stand was good. No damage from insects or rust was reported.

The largest profit, \$13.26 per acre, or 272 per cent on the investment in fertilizers, was afforded by Plot 10, where a complete fertilizer containing 100 pounds of kainit was used. The next largest profit, \$10.16 per acre, was on Plot 12, which received acid phosphate, nitrate of soda, and 100 pounds of kainit per acre.

The average increase in pounds of seed cotton per acre attributable to cotton seed meal was 198 pounds; to acid phosphate 42 pounds; and with 200 pounds of kainit there was a loss of 50 pounds per acre, although 100 pounds per acre was very effective.

Increase of seed cotton per acre when cotton seed meal was added.

To unfertilized plot	312 lbs.
To acid phosphate plot.....	84 lbs.
To kainit plot.....	164 lbs.
To acid phosphate and kainit plot.....	230 lbs.
<i>Average increase with cotton seed meal.....</i>	<u>198 lbs.</u>

Increase of seed cotton per acre when acid phosphate was added:

To unfertilized plot.....	176 lbs.
To cotton seed meal plot.....	—52 lbs.
To acid phosphate plot.....	—12 lbs.
To cotton seed meal and acid phosphate plot.....	54 lbs.
<i>Average increase with acid phosphate.....</i>	<u>42 lbs.</u>

Increase of seed cotton per acre when kainit was added:

To unfertilized plot.....	82 lbs.
To cotton seed meal plot.....	—66 lbs.
To kainit plot.....	—106 lbs.
To cotton seed meal and kainit plot.....	40 lbs.
<i>Average increase with kainit.....</i>	<u>50 lbs.</u>

Increase from use of cotton seed meal..... 230 lbs.

Increase from use of nitrate of soda..... 140 lbs.

Cotton seed meal better by..... 90 lbs.

In COLBERT COUNTY, an experiment was conducted by W. E. Hargett, near Tuscumbia. This proved inconclusive because of poor stand on some of the plots. See page 74.

In MADISON COUNTY, an experiment conducted by G. E. Hoy, near Huntsville, proved inconclusive because of lack of uniformity in the yields of the unfertilized plots. See page 74.

In MADISON COUNTY, an experiment was conducted by C. T. Butler, 11 miles south of Gurley. This experiment proved inconclusive because of the difference in fertility of the unfertilized plots, probably caused by the application of heavy amounts of potash in 1911. See Page 74.

In FRANKLIN COUNTY, an experiment was conducted by F. Dennis, near Russellville. It was inconclusive.

In MORGAN COUNTY, an experiment was conducted near New Decatur, by L. B. Wyatt. This proved inconclusive because of poor stand and unfavorable weather conditions.

In DEKALB COUNTY, an experiment conducted by J. J. Sampley on the farm of J. B. Isbell, near Ft. Payne, proved inconclusive, probably because cotton worms injured the experiment. Under these conditions acid phosphate was extremely helpful and profitable because it enabled the bulk of the crop to mature before damage was done by the cotton caterpillar. The apparent loss on the plots where cotton seed meal was used may have been due to a later growth on these plots, resulting in greater damage by worms. See page 74.

In WINSTON COUNTY, R. J. Mobley conducted an experiment near Natural Bridge. This proved inconclusive because of lack of uniformity in the yield of the unfertilized plots.

In BLOUNT COUNTY, an experiment conducted by W. E. Lecroy, near Oneonta, proved inconclusive because of lack of uniformity in the natural fertility of the different plots.

In ETOWAH COUNTY, an experiment conducted by T. A. Lewis, $5\frac{1}{2}$ miles east of Gadsden, proved inconclusive because of lack of uniformity in the yields of the unfertilized plots. See page 74.

In LAMAR COUNTY, an experiment conducted by Jack Woods, 6 miles south of Sulligent, proved inconclusive because all check plots were left out.

In ST. CLAIR COUNTY, an experiment conducted by Jenkins and Stevenson, near Asheville, proved inconclusive because of lack of uniformity in the natural fertility of the unfertilized plots. See page 73.

In CALHOUN COUNTY, an experiment was conducted by E. M. Cowden, one-half mile east of Alexandria. The soil was dark red with red clay subsoil and has been long in cultivation. This experiment proved inconclusive probably because of the late date of planting, May 20th, and the early frost. Under these conditions kainit was apparently not needed, while cotton seed meal and acid phosphate, both when used separately and in a complete fertilizer, were effective. See page 73.

In PICKENS COUNTY, an experiment conducted by L. R. Hollingsworth, near Reform, proved inconclusive because of lack of uniformity in the yields of the unfertilized plots. See page 74.

In PICKENS COUNTY, an experiment was conducted by E. Sanders, near Aliceville, on red upland soil. This proved inconclusive because of one of the unfertilized plots afforded a much larger yield than the other two. However, the figures suggest that nitrogen was especially beneficial both in the form of cotton seed meal or nitrate of soda. See page 74.

In TUSCALOOSA COUNTY, an experiment conducted by H. T. Burks, near Tuscaloosa, proved inconclusive because of being mixed in picking.

In TALLADEGA COUNTY, an experiment conducted by W. Boaz, near Childersburg, proved inconclusive. See page 73.

In TALLADEGA COUNTY, an experiment conducted by J. R. Weisinger, near Talladega, proved inconclusive because of late planting and further delay in germination. In spite of these unfavorable conditions there was a satisfactory increase from the use of cotton seed meal, and a still larger increase was obtained from the use of nitrate of soda. See page 73.

In CLAY COUNTY, an experiment conducted by J. F. Lester, near Lineville, proved inconclusive because of late planting. However, the results suggest that cotton seed meal was more important than acid phosphate, and that in 1912 there was no advantage from using kainit on this soil. Page 73.

In RANDOLPH COUNTY, an experiment conducted by R. E. Taylor, near Roanoke, proved inconclusive. See page 73.

In BIBB COUNTY, an experiment at Randolph, conducted by J. E. Perry, proved inconclusive because of the lack of uniformity in the fertility of the unfertilized plots. See page 73.

In CHAMBERS COUNTY, an experiment conducted by W. T. Edge, near Cusseta, proved inconclusive because of lack of uniformity between the unfertilized plots.

