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CORN AND COTTON.

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CORN.

FERTILIZER EXPERIMENTS.

A given quantity of kainit, acid phosphate and cotton seed meal *mixed* thoroughly and applied at time of planting, *compared* with a *compost* of a certain quantity of cotton seed, acid phosphate and stable manure applied at time of planting.

Plot No. 1 was fertilized with kainit, acid phosphate and cotton seed meal, well mixed, at the rate of 1,000 pounds per acre.

Plot No. 2 with cotton seed, acid phosphate and stable manure composted, at the rate of 2,000 pounds per acre.

By referring to the following table of results, it will be noticed that plot No. 1, which was manured with a compound of commercial fertilizers made a larger yield than plot No. 2, which was manured with compost.

By comparing the cost of substances used in this experiment, it was rather more in plot 2 than in plot No. 1.

Kainit, acid phosphate and cottonseed meal in plot No. 1, *compared* with compost of cotton seed, acid phosphate and stable manure in plot No. 2.

Corn planted April 4th, and fertilizers applied in drill at the same time.

Size of plot $\frac{1}{2}$ acre.

PLOT 1.

Name and Quantity of Fertilizers used per $\frac{1}{2}$ Acre.	Quantity per acre.	Pounds yield of corn in shuck per plot.	Pounds yield of corn in shuck per acre.	Bushels yield of ear corn per acre, allowing 76 lbs. in the shuck to the bushel.
Kainit 100 lbs.	200 lbs.	.....	.....	.....
Acid Phosphate . . . 150 lbs.	300 lbs.	.....	.....	.....
Cotton Seed Meal. 250 lbs.	500 lbs.	.....	.....	.....
500 lbs.	1000 lbs.	815	1630	21.11-19

PLOT 2.

Names and Quantity of Fertilizers used in Compost for $\frac{1}{2}$ Acre.	Quantity per acre.	Pounds yield of corn in shuck per plot.	Pounds yield of corn in shuck per acre.	Bushels yield of ear corn per acre, allowing 76 lbs. in the shuck to the bushel.
Cotton Seed.....	333 $\frac{1}{3}$ lbs.	666 $\frac{2}{3}$ lbs.	.....	.....
Acid Phosphate.	333 $\frac{1}{3}$ lbs.	666 $\frac{2}{3}$ lbs.	.....	.....
Stable Manure..	333 $\frac{1}{3}$ lbs.	666 $\frac{2}{3}$ lbs.	.....	.....
	1000 lbs.	2000 lbs.	550	1110
				14 3-5

CORN.

VARIETY EXPERIMENT.

Object of this experiment was to ascertain the best yielding variety.

Corn was planted on plots 1-14 of an acre in size—rows 5 feet wide and corn dropped 3 feet apart in drill.

Fertilizer, composed of 250 pounds cotton seed meal and 250 pounds acid phosphate, was applied in drill at time of planting, and was mixed with soil by running a scooter in the furrow. Corn came up well and was killed by the severe freeze March 25th. Replanted April 4th and several other times after. The Renfro, Experiment Station Yellow, Cocke's Prolific, Pride of America, and Clayton Bread, gave the best yields in the order named. A perfect stand was never secured upon any of the plots, though it was better on some plots than on others, and hence this fact with some inequality of the soil, prevents reaching any reliable conclusions as to the best variety. Further experiments will be necessary to arrive at correct conclusions.

The following table shows the results of the experiment:

Plots 1-14 acre. Fertilizers applied in drill March 10th, consisting of 250 lbs. cotton seed meal and 250 lbs acid phosphate per acre.

Corn planted March 17th, killed by freeze, and replanted April 4th.

Plot No.	Names of Varieties.	SEEDSMAN.	Pounds yield per plot in shuck.	Pounds yield per acre in shuck.	Bushels yield per acre, ear corn, allowing 76 lbs. in the shuck to the bushel.
1	Expt. Station Yellow	Expt. Station.....	96.5	1351	17 $\frac{3}{4}$
2	Clayton Bread....	Jas. Clayton.....	82.2	1151	15 1-7
3	Renfro .....	.....	99.5	1393	18 $\frac{1}{3}$
		T. W. Woods & Son.			
4	Pride of America.	Richmond, Va.....	91.0	1274	16 $\frac{3}{4}$
5	Gentry's Market.	" ".....	75.0	1050	13 4-5
6	Hickory King	" ".....	74.0	1036	13 $\frac{3}{4}$
7	Blount's Prolific..	" ".....	75.0	1050	13 4-5
8	Giant Broad Grain	" ".....	61.0	854	11 $\frac{1}{4}$
9	Cocke's Prolific... Virginia Gourd	" ".....	90.0	1260	16 9-10
10	Seed.....	" ".....	66.0	924	11 7-11
11	Clarke's Mastodon Improved Golden	" ".....	45.0	630	8 3-10
12	Dent	" ".....	75.0	1050	13 4-5
13	Improved Leam ing	" ".....	25.0	350	4 $\frac{2}{3}$
14	Dallas Prolific....	" ".....	75.0	1050	13 4-5

COTTON.

Compost applied on February 1st, against compost applied at planting time.

Floats vs. Acid Phosphate.

Numerous enquiries have arisen from time to time, which pays the better, to compost green cotton seed, acid phosphate and stable manure about Feb. 1st and let it remain in bulk to be applied at planting time, or to apply it as soon as made, thereby saving any further expense and trouble.

Also to determine the *comparative* value of acid phosphate with floats, in *compost*, to be applied at time of planting.

Plot 1, applied Feb. 1st.

Plot 3, applied April 17th.

Plot 2, Floats with compost applied April 17.

For this experiment, one and a half acres of land, of uniform fertility, was selected and divided into plots of $\frac{1}{2}$ acre each. The soil was sandy and poor.

On Feb. 1st, a compost of equal parts of green cotton seed, acid phosphate and stable manure was made, and on the same day was put on plot 1. An equal quantity of this same mixture was put in a heap until planting time, when it was put on plot 3.

While the results are seen from the table, one fact is worthy of note, that plot 1 remained greener and maintained its vigor a longer period than plot 3, and did not yield to the effects of rust as badly as plot 3.

In plot No. 2 as will be seen from the table, floats were substituted in place of acid phosphate as in plot 3, the same quantity of green cotton seed and stable manure being used on both.

The following table shows the results :

COTTON.

Compost Applied February 1st.

Plot Number	Name and quantity of fertilizers used on one-half acre.	Rate per acre, lb	Yield Seed Cotton Per Plot.			Total yield per plot seed cotton.	Total yield per acre seed cotton
			1st picking, Sept. 5th.	2nd picking, October 2d.	3rd picking, Nov. 15th.		
	Green cotton seed, 400 lbs.	800					
	Acid Phosphate, " "	800					
	Stable manure, " "	800					
1	1200 lbs.	2400	336	187	28	551	1102

COTTON.

Compost Applied April 17th.

Plot Number.	Name and quantity of fertilizers used on one-half acre.	Rate per acre, lb	Yield Seed Cotton Per Plot.			Total yield per plot seed cotton	Total yield per acre seed cotton
			1st picking, Sept. 13th.	2nd picking, October 2d.	3rd picking, Nov. 15th.		
	Green cotton seed, 400 lbs.	800					
	Acid Phosphate, " "	800					
	Stable manure, " "	800					
3	1200 lbs.	2400	439	97	9	545	1090

COTTON.

Floats vs. Acid Phosphate in Plot 3.

Plot Number.	Name and quantity of fertilizers used on one-half acre.	Rate per acre, lb	Yield Seed Cotton Per Plot.			Total yield per plot seed cotton	Total yield per acre seed cotton
			1st picking, Sept. 13th.	2nd picking, October 2d.	3rd picking, Nov. 15th.		
	Green cotton seed, 400 lbs.						
	Floats, " "						
	Stable manure, " "						
2	1200 lbs.	2400	392	138	30	560	1120

COTTON.

COMPARISON OF FERTILIZERS AND COMPOST.

The object of this experiment was to compare a given quantity of kainit and acid phosphate *mixed* with a certain quantity of cotton seed meal as is shown in plot 1, with a similar quantity of kainit and acid phosphate *composted* with a certain amount of stable manure and cotton seed as in plot 2. That is, the quantity of kainit and acid phosphate in both plots being the same, using the cotton seed meal in plot 1, against the cotton seed and stable manure in plot 2. Fertilizers in plot 1 were thoroughly mixed and applied at

time of planting; on plot 2 composted and applied at same time. The plots being about equal in natural fertility, and both receiving equal quantities of kainit and acid phosphate, the results appear in favor of the cotton seed meal as against the cotton seed and stable manure. Should the improved condition of the land be considered, which thing however was not contemplated in this experiment, the question arises, which has paid the better, plot No. 1, or No. 2? In plot No. 1, the nitrogen in the cotton seed meal was more available than in plot 2, and this being true there is left in plot 2, for future crops, a larger per cent. of fertilizing matter. No conclusions however can be drawn in this particular, as it would require further trials on both plots to ascertain the comparative quantity of fertilizers now in reserve on both plots.

It is a known fact from observation that land fertilized with stable manure and cotton seed shows the effects for several years following.

The following is a statement of results:

A given quantity of acid phosphate, kainit and cotton seed meal mixed to be compared with a given quantity of acid phosphate, kainit, cotton seed and stable manure composted.

Size of plot, $\frac{1}{2}$ acre.

PLOT 1.

Names and Quantity of Fertilizers used on $\frac{1}{2}$ Acre.	Quantity per Acre.	Yield per Plot.				Yield per Plot.	Yield per Acre.
		1st Picking, Sept. 13th.	2nd Picking, Oct. 9th.	3rd Picking, Nov. 1st.			
Kainit. 100 lbs.	Kainit. 200 lbs.	.....	.....	.....	.....	.....
Acid Phos. . 150 lbs.	Acid Phos. 300 lbs.	.....	.....	.....	.....	.....
Cotton S. M. 250 lbs.	Cotton S.M. 500 lbs.	.....	.....	.....	.....	.....
<u>500</u>	<u>1000</u>	354	285	86	725	1450	

PLOT 2.

Name and Quantity of Fertilizers used on $\frac{1}{2}$ Acre.	Quantity per Acre.	Yield per Plot.					Yield per Plot.	Yield per Acre.
		1st Picking, Sept. 13th.	2nd Picking, Oct 13th.	3rd Picking, Nov. 11th.				
Kainit..... 100 lbs.	Kainit..... 200 lbs	.....	.....	.....	.....	.....	.....
Acid Phos. 150 lbs.	Acid Phos. 300 lbs	.....	.....	.....	.....	.....	.....
Cotton Se'd 375 lbs.	Cotton Se'd 750 lbs.	.....	.....	.....	.....	.....	.....
Stable Ma. 375 lbs.	Stable Ma. 750 lbs.	.....	.....	.....	.....	.....	.....
1000	2000	245	305	77	627	1254		

COTTON.

INTERCULTURAL EXPERIMENTS WITH FERTILIZERS.

The object of this experiment was to ascertain whether or not, it would pay to apply nitrogenous fertilizers interculturally.

For this purpose, a piece of sandy upland of medium fertility was selected, and made into plots of 1-10 of an acre each. Rows were laid off, 210 feet long by $3\frac{1}{2}$ feet wide.

Just before planting, the following mixture of fertilizers was applied to each plot alike, at the rate of 200 pounds per acre: 200 lbs. acid phosphate, 66 lbs. muriate potash and 66 lbs. sulphate ammonia. Soon after the cotton came up, it was chopped, and then sided with heel-scape. The stalks of cotton were counted in each row and the same number allowed to stand on each plot.

On June 16th, cotton seed meal and nitrate soda, in different quantities, were applied broad-cast, at which time the cotton was plowed with heel-scape.

From observations made during the latter part of June, the plots fertilized interculturally began to show a little difference, and by the time the second application was made, the difference was quite marked in favor of the fertilizers. Further observations later on showed a still greater and

more decided improvement in the crop, that is, the stalks, were much larger, were taking on fruit more rapidly and presented a richer color than the plots not fertilized after planting. By noticing the difference in the yield of plots having the same quantity of fertilizers, it appears that a *given* amount used interculturally at an *earlier stage of crop* growth, gave better results than the same quantity, one-half applied at *the earlier stage* and the other half several weeks later. For instance, by comparing plot No. 1 with plot No. 7, it is shown that a better yield resulted from the single application to plot 7 in June than from the two applications to plot 1 in June and July.

Also in comparing No. 2 with No. 8, it is seen that a better yield was secured from the June application on No. 8, than from the June and July applications on No. 2.

By a still further comparison of plots 4 and 9, the same fact is established, that a single application of nitrate soda in June on plot 9, gave a better yield than the same quantity of nitrate soda at different times on plot No. 4. The 100 lbs. applied *at once* to No. 9 acted more efficiently than the *two* applications to No. 4, and the inference is, that the most favorable conditions existed as to No. 9, for a maximum yield.

Taking the average yield of the three unmanured plots, which is 809½ lbs. seed cotton per acre, the difference in favor of fertilizers is plainly seen by reference to the table of results.

The following table shows the results of this experiment:

COTTON—INTERCULTURAL EXPERIMENT.

PLOTS 1-10 OF AN ACRE.

At time of planting, April 14th, Acid Phosphate 200 pounds, Nitrate Potash 66 pounds, and Sulphate Ammonia 66 pounds, were mixed, and 20 pounds of this mixture applied to each plot. Subsequent fertilization is shown in the following table:

Plot.	No.	Fertilizers used per plot. Applied April 14th.	Name and quantity of fertilizers and when applied. Rate per acre.	Name and quantity of fertilizers and when applied. Rate per acre.	Yield seed cotton per plot				Total yield per plot.	Total yield per acre.
					1st picking, Sept. 12th.	2nd picking, Sept. 28th.	3rd picking, Oct. 13th.	4th picking, Nov. 1st.		
"	1	Acid Phosphate . . . 12.05 Muriate Potash . . . 3.97½ Sul. Ammonia . . . 3.97½ 20 lbs.	June 16th. 100 pounds. Cotton seed meal . . .	July 5th. 100 pounds. Cotton seed meal . . .	48.15	55.50	31.50	13.50	148.65	1486.5
"	2	Acid Phosphate . . . 12.05 Muriate Potash . . . 3.97½ Sul. Ammonia . . . 3.97½ 20 lbs.	June 16th. 200 pounds. Cotton seed meal . . .	July 5th. 200 pounds. Cotton seed meal . . .	41.25	50.25	43.50	24.75	159.75	1597.5
"	3	Acid Phosphate . . . 12.05 Muriate Potash . . . 3.97½ Sul. Ammonia . . . 3.97½ 20 lbs.	No manure	No manure	51.15	25.50	6.30	1.50	84.45	844.5
"	4	Acid Phosphate . . . 12.05 Muriate Potash . . . 3.97½ Sul. Ammonia . . . 3.97½ 20 lbs.	June 16th. 50 pounds. Nitrate soda	July 5th. 50 pounds. Nitrate soda	42.60	63.75	39.30	19.50	165.15	1651.5
"	5	Acid Phosphate . . . 12.05 Muriate Potash . . . 3.97½ Sul. Ammonia . . . 3.97½ 20 lbs.	June 16th 100 pounds Nitrate Soda	July 5th. 100 pounds. Nitrate soda	35.55	57.00	29.55	18.90	141.00	1410.0

COITON.—INTERCULTURAL EXPERIMENT—CONTINUED.

Plot.	No.	Fertilizers used per plot. Applied April 14th.	Name and quantity of fertilizers, and when applied. Rate per acre.	Name and quantity of fertilizers, and when applied. Rate per acre.	Yield seed cotton per plot				Total yield per plot.	Total yield per acre.
					1st picking, Sept. 12th.	2nd picking, Sept. 28th.	3rd picking, Oct. 13th.	4th picking, Nov. 1st.		
"	6	Acid Phosphate.... 12.05 Muriate Potash.... 3.97½ Sul. Ammonia..... 3.97½ 20 lbs.	No Manure.....	No Manure.....	44.25	22.50	7.50	3.00	77.25	772.5
"	7	Acid Phosphate.... 12.05 Muriate Potash.... 3.97½ Sul. Ammonia..... 3.97½ 20 lbs.	June 16th. 200 pounds. Cotton Seed Meal....		55.95	78.00	30.00	21.00	184.95	1849.5
"	8	Acid Phosphate.... 12.05 Muriate Potash.... 3.97½ Sul. Ammonia..... 3.97½ 20 lbs.	June 16th. 400 pounds. Cotton Seed Meal....		66.75	90.00	25.80	9.00	191.55	1915.5
"	9	Acid Phosphate.... 12.05 Muriate Potash.... 3.97½ Sul. Ammonia..... 3.97½ 20 lbs.	June 16th. 100 pounds. Nitrate Soda.....		42.45	90.00	23.55	15.75	171.75	1717.5
"	10	Acid Phosphate.... 12.05 Muriate Potash.... 3.97½ Sul. Ammonia..... 3.97½ 20 lbs.	No Manure.....	No Manure.....	51.75	24.00	3.90	1.50	81.15	811.5

Average yield of unmanured plots, 809.5 pounds per acre.