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EXPERIMENT STATION

TUSKEGEE NORMAL & INDUSTRIAL INSTITUTE

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Increasing the Yield of Corn

BY

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The Tuskegee Experiment Station

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THE TUSKEGEE AGRICULTURAL EXPERIMENT STATION

BULLETIN NO. 15 JUNE, 1909.

INCREASING THE YEILD OF CORN.

G. W. CARVER, M. S., Agr.

When we consider that Alabama alone cultivated, in 1907, 2,961,000 acres in corn with an average of only 15 1-2 bushels to the acre, it at once becomes apparent that something must be done to bring up this unfortunately low yeild per acre. It is futher accentuated from the fact that within the last ten years the average has never been higher than 16 bushels in 1906 and fell as low as 8 2-5 bushels in 1902.

While it is true that Alabama soil and climate are particularly adapted to cotton, under proper management in the matter of the preparation of the soil, fertilizing, selection of seed and cultivation, very satisfactory yeilds may be produced.

Our Experiment Station has devoted much time to this important crop for both its grain and forage values.

In performing these experiments, we had to constantly keep in mind that we were dealing with a typical worn out soil, and that this soil must constantly grow richer instead of poorer, and at the same time must furnish a living for the farmer.

PREPARATION OF THE SOIL

In our Southern soils, we must, as a rule, recognize both physical and chemical deficiency, the former being of quite as much and often of greater importance than the latter; so, therefore, we began at once to correct that evil by deep (9 inch) plowing and thorough harrowing until an ideal seed bed was made.

This land had a number of ferruginous (brick or pipe clay) spots in it from a quarter to a half acre in extent, known by the common term of "clay gauls"; upon these, not even grass would grow. These spots were covered to a depth of six inches with pine straw, leaves and swamp muck. This was thoroughly turned under.

The same quantity of barn-yard manure was spread and plowed under in the same way, only not so deep. It was thoroughly harrowed several times before planting.

SELECTION OF SEED

After the soil has been thoroughly prepared, the second requisite to heavy yeilds is good seed. In this we used essentially the same score card adopted by the Missouri Corn Growers' Association, which is as follows:

Shape of Ear—The shape of ear should be long and as nearly cylindrical as possible, as such ears usually contain more grains than when the rows are crooked and the grains large and small.

Color—(a) Kernels should be uniform as to both color and size, gradually growing smaller toward the tip of the ear. White corn should show no yellowish caps, and yellow corn should show no white caps, as in either case, such, shows an admixture of other

varietes. (b) The cobs should all be of one color, for the same reasons, meaning careless breeding and poor selection.

Butts—The butts should be well rounded out with deep, regular kernels solidly compacted together around a clean cup-shaped cavity.

Tips—Like the butts, they should be well rounded out with good deep kernels.

Other Characteristics—Do not select corn for planting that has its grains loose on the cob. Select a hard, flinty corn as far as possible, for Southern planting as it resists the grain weevil much more effectually than the softer types.

TEST OF VARIETIES

The following varieties were tested, keeping these two points in mind.

1st. Its value for silage purposes, i. e.; we desired to ascertain what variety or varieties would give the largest ear of corn, the greatest tonnage per acre, and the best quality of fodder.

2d. We further sought to determine, under normal conditions, the variety best adapted to our light soils, in the matter of grain production.

VARIETIES TESTED.

White Capped Yellow Dent
Hickory King
Country Gentleman
Mexican June
Maple-Dale
White Dent
Yellow Dent
White Pearl Pop Corn
Silver Mine
Tennessee Red Cob
Uncle Sam
Jackson's Red Cob
Reynold's White
Alexander's Six Eared
White Rice Pop Corn
Mosbey's Prolific
Marlsboro
Snow Flake
Early Indiana

The above were all planted in 1-10 acre plots, on the same day and in the same way.

FERTILIZATION AND CULTIVATION.

The rows for each plot were run with a middle burster and the following fertilizers carefully mixed and put in the drill:

75 pounds, Acid Phosphate.
75 pounds, Muriate of Potash.
8 tons of barnyard manure.

After putting into the drill, a small scooter was run directly in the centre of the furrow which effectually mixed the fertilizer with the earth.

Just before tasseling, 100 pounds of Nitrate of Soda, per acre, was scattered within five or six inches of the plants, the cultivator following immediately behind.

The ground was never allowed to become hard or baked, but a dust mulch was kept by frequent shallow plowings with a cultivator,

the depth of cultivation was never deeper than 2 1-2 inches.

The following varieties gave the most satisfactory yields:

Variety	Corn		Dry Fodder	
	Bu.	Pks.	Tons	Lbs.
Mosbey's Prolific	40	1 1-2	7	1,750
Tennessee Red Cob	29	2 1-2	3	650
Alexander's Six Eared	29	2	3	1,200
Reynold's White	26	1-2	3	1.000
Yellow Dent	23	1	3	300
White Dent	20	2	3	700
Snow Flake	18	2	2	700
Marlsboro	17	2 1-2	2	1,250
Early Indiana	3	2		1,150
Mexican June	3	1	7 1-2	1,390

The above table is self-explanatory and shows that of all the 19 varieties tested, Mosbey's Prolific gave the highest yield of grain and was only slightly exceeded in the production of fodder by the Mexican June.

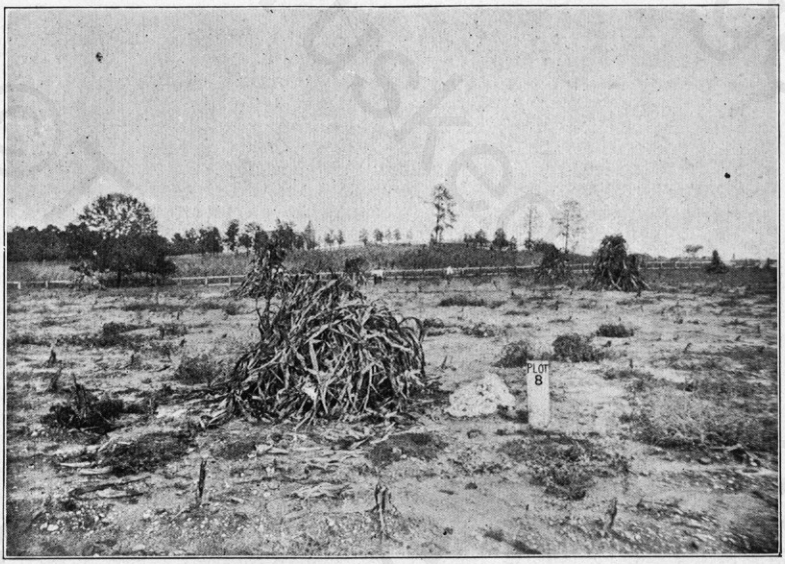
Plot 2.

This plot was photographed just before the corn began to tassel. The leaves would curl some during the day but the lower blades did not fire, and all the leaves would be unrolled by morning and look fresh and vigorous. Also a perceptible increase in growth could be noticed each morning. Compare with plot 8.

The total cost of preparing the land, seed, planting, cutting and delivering to the Silo was $11.00. The reduction in expense covering largely from the small crop to be harvested. The expense account on plot 2 was $12.75 owing to the increased cost of harvesting such a heavy crop.

Plot 8.

Plot 8 is so thoroughly self-explanatory that it needs but little comment more than to say that it only produced 7 1-2 bushels of corn to the acre and 1 1-2 tons of green fodder. The corn was pale and sickly throughout the entire season. Fully two-thirds of the leaves were parched up by the drouth, and those that remained green would roll up during the day and often remained so during the night.



Plot 8

Plot 8 showing the little bunch of fodder and the almost invisible pile of corn.

I feel that the above lesson cannot be too strongly impressed upon the readers of this bulletin.

The scanty harvest is only too typical of hundreds of acres of land in Alabama alone, and land fraught with great possibilities if only the proper amount of brains and brawn are put into it.

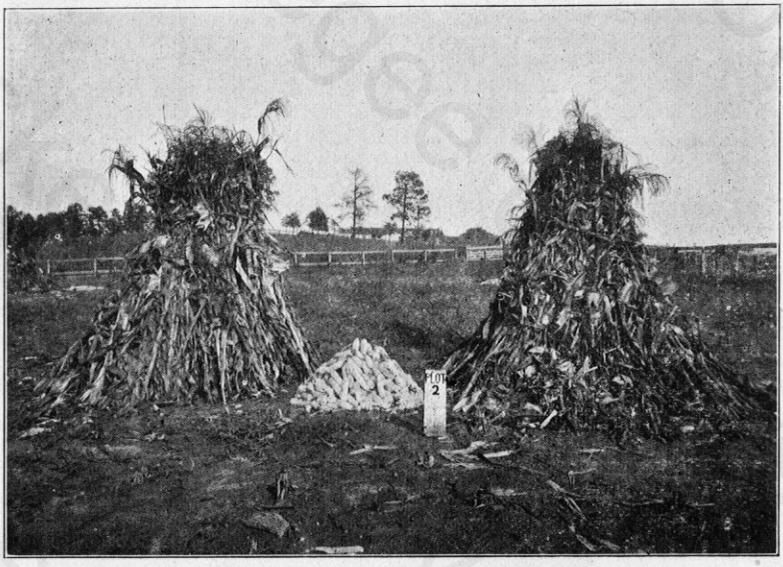
EFFECT OF FERTILIZERS

Having prepared our land properly, which is the first and highest essential, the next thing after the selection of seed is correct fertilization.

It is not uncommon to hear farmers say, "I have so much and so much cotton or corn planted, but I did not put anything under it." This is a great mistake and to prove the fallacy of such farming, two plots were taken—one fertilized as already described in this bulletin. Plot 8 was prepared in the same way and every detail was carried out the same as for plot 2 except that no fertilizers of any kind were used. Plot 2 grew off vigorously, stood the drouth well, yeilded 40 bushels and 1 1-2 pecks of corn to the acre, and in green fodder 14 1-5 tons. (See plots 2 and 8.)

CONCLUSIONS

I think the following conclusions may be safely drawn from this bulletin:



Plot 2.

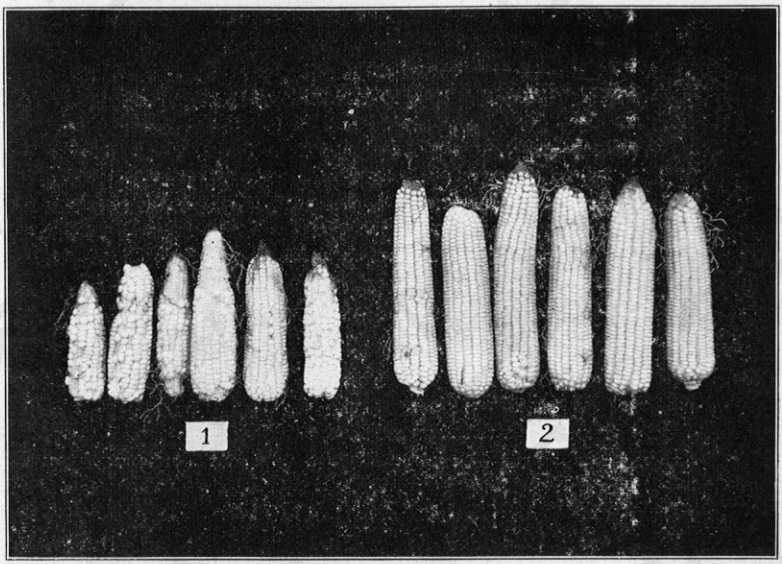
Plot 2 shows the corn and fodder from a tenth of an acre. Compare the harvest from the above plot with the harvest from plot 8. I think you will not have the slightest trouble in seeing that it not only pays to fertilize, but it pays to fertilize well.

(1) That we can greatly increase the yeild of both grain and fodder by observing the following:

(a) A deep and well prepared seed bed.
(b) Selection of good seed.
(c) Proper fertilization.
(d) Frequent and shallow cultivation.

There are but few if any of our farm crops that respond more readily to the things enumerated above than corn.

If the above is carried out, the time is not far distant when we can be producing fifty bushels of corn to the acre just as easy as the fifteen we are making now.



Cut 5 shows in figure one, six of the best ears from plot 8. Figure 2 shows six of the best ears from plot 2.

The six little short deformed ears as the best representatives from plot 8 and the six large plump ears from plot 2 tell their own story. You can have number 1 by not fertilizing, and number 2 by the application of the proper kind of fertilizers. Which do you want, take your choice.