

1889

Report of the State Experiment Station, Baton Rouge, LA. for 1888

William Carter Stubbs

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REPORT

OF THE

STATE EXPERIMENT STATION,

BATON ROUGE, LA.

FOR

1888.

BULLETIN NO. 21.

WM. C. STUBBS, A. M., Ph. D., Director.

D. N. BARROW, B. S., Assistant Director.

—ISSUED BY—

THOMPSON J. BIRD,

COMMISSIONER OF AGRICULTURE, BATON ROUGE, LA.

BATON ROUGE:

PRINTED BY THE ADVOCATE.

1888.

LOUISIANA STATE UNIVERSITY AND A. AND M. COLLEGE, }
 OFFICE STATE EXPERIMENT STATION, }
 BATON ROUGE, LA., January, 1889. }

Major T. J. Bird, Commissioner of Agriculture, Baton Rouge, La.:

Dear Sir—I hand you annual report of Mr. D. N. Barrow, Assistant Director of State Experiment Station, Baton Rouge, La., and request that you publish the same as Bulletin No. 21.

Respectfully submitted,

WM. C. STUBBS, Director.

STATE EXPERIMENT STATION, }
 BATON ROUGE, January, 1889. }

To Dr. W. C. Stubbs, Director:

Dear Sir—Herewith I hand you results of work done on this Station for the year ending December 31, 1888. When the Station was established here in January of that year there was nothing but an old field. The work of preparing this land for the reception of plants necessarily delayed planting all crops until rather late. However, a good deal has been accomplished; I hope the accompanying report shows.

Very respectfully,

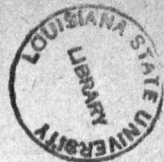
DAVID N. BARROW,

Assistant Director.

Location, Improvements, Soil, Etc.

The State Experiment Station is located on ground formerly belonging to the United States and used as a garrison. It has recently been donated to the State University and Agricultural and Mechanical College, and by it assigned to the use of the Station. On account of a sinuous bayou running through this tract, preventing accessibility during high water, the buildings had to be erected at the extreme Eastern end of the tract, directly on the road which leads to Bayou Sara and Clinton. This tract of land is located on what is termed geologically the "Bluff Formation," and its soil is a brown loam containing some clay, formerly very rich, but now greatly reduced in fertility. This loam is underlaid at a depth of 4 to 10 feet by the calcareous silts of the Loess formation. A neat barbed wire fence encloses most of the tract. This entire tract had been for years the "commons" of Baton Rouge and had been severely depastured by numerous cattle and horses. It was densely covered with a mixture of carpet, Bermuda and Coco grasses. Of the carpet (*Paspalum*) grasses no less than five or six distinct species were found; among them the soon-to-become famous Louisiana Grass "*Paspalum Ovatum*," now advertised so largely in the North.

This turf land had to be transformed into a station and the work accomplishing it has been of a Herculean kind. The following houses have been erected: A neat and substantial dwelling, a stable for mules and cows, a large barn and necessary poultry houses. In the barn is an ensilage cutter, scientific grinding mill and a twenty-saw improved Gullett gin, with feeder and condenser. The last was made to order and is used to gin the cotton experimented on. These are run by a Book-water engine and boiler; the power being first transmitted to a 35-foot shaft, running across the north end of the barn. The



engine and boiler, outside of barn, is enclosed in a neat house 10x10, covered like the barn with corrugated iron.

In the rear of the house a garden of about one-half acre has been neatly enclosed, while the front yard, barn yard and fruit orchard have been securely enclosed with a combination wire and plank fence. Paint and whitewash have been freely used to give durability to the structures and attractiveness to the Station. Connected with the barn are three platform scales, weighing from a fraction of an ounce to five tons—affording excellent facilities for weighing all farm products.

LIVE STOCK.

Two fine mules—an inheritance from the old Station—constituted our live stock, at the beginning of the present year. Since that time there has been added three Holstein and two Jersey cattle, and ten varieties of chickens and one of ducks. The Holsteins were purchased of Mr. J. W. Howard, Aberdeen, Miss., and are of the celebrated Aggie strain. The Jerseys were procured from Dr. Wm. E. Oates, Vicksburg, Miss., and represent about 75 per cent of the celebrated St. Lambert blood. It is proposed as soon as possible to add other breeds of cattle. Also, hogs and sheep.

Our Holstein cow, the only one now to the pail, is a beautiful four-year-old animal, and gives five gallons of milk per day. She is fed daily upon the following ration, which costs 27 cents, viz:

| | | |
|----|--------|--------------------|
| 4 | pounds | Cotton Seed Meal. |
| 4 | " | Wheat Bran. |
| 6 | " | Corn and Cob Meal. |
| 18 | " | Pea Vine Hay. |

It takes less than one quarter of the time of one man to attend this cow. If we put this at 33 cents per day, the cost of the cow for feed will be 60 cents per day. Against this then is a credit of five gallons of milk worth \$1.50—leaving 90 cents a day profit for a good cow, well kept. Few investments pay so well and later this expense can be considerably reduced by pasturage. At the present date, January 15th, the University campus is

green with white clover. That dairying and stock-raising can be made exceedingly profitable all over the South (particularly on these bluff lands where Bermuda and white clover grow in almost tropical luxuriance), admits of scarcely a doubt.

From eggs purchased of W. W. Garig, the pioneer poultry raiser in the South, the following varieties of poultry have been raised: Black Minorcas, Langshans, Barred and White Plymouth, Partridge and Buff Cochins, Brown Leghorn, Light Brahmas, Wyandottes and Houdans of chickens, and Pekin of ducks. Some of each variety have been sent to the North Louisiana Experiment Station. Our losses have been heavy by petty thieves, but hereafter with separate pens for each, it is hoped that such depredations will be discontinued.

GARDEN AND ORCHARD.

In the garden forty-eight varieties of strawberries, seven varieties of raspberries and one of blackberries have been planted. These were secured too late to judge of the merits of each variety last year, but they are all now fairly started and comparative results are promised the ensuing spring. A large number of strawberry plants have been gratuitously distributed over the State, and next year a much larger quantity can be spared.

A large orchard, embracing two of the leading varieties of almonds, nectarines, apricots, plums, peaches, filberts, Japanese persimmons, apples, pears, figs and chestnuts has been planted and is now doing well, despite the awful storm of August 19th. A vineyard of thirty varieties has also been planted and most of the varieties made a good growth of wood the first year.

The results of potatoes, peas and small grains have already been given to the public in Bulletin No. 17. The ground between the trees in the orchard was last year utilized in growing a number of varieties of watermelons and canteloupes.

FORAGE PLANTS.

The following varieties of sorghum were grown with the double purpose of testing their adaptability to sugar making and

for forage purposes. At various stages of growth they were carefully analyzed and results published in Bulletin No. 19. In same Bulletin will be found an account of the shipment of a car-load of Early Orange cane to Sugar Experiment Station and there manufactured into sugar.

The following are the varieties of Sorghum used: Early Amber, Early Orange, Links Hybrid, Honduras, Chinese, and a cross between Early Amber and Honduras. Besides these the non-saccharine Sorghums, Rural Branching, Kaffir Corn, Milo Maize and White Dhouira were also planted. Teosinte and Pearl Millet completed our list of large forage crops. All yielded well, giving two and a-half crops of excellent fodder, but exact results cannot be given since our platform scales, ordered early in summer, were delayed "in transitu," and did not reach us in time for our summer crops. The Kaffir Corn is noted for its large yield of seed, but in this country, where the English sparrow abounds, small seeded plants have little chance for reproduction. Of all the crops mentioned above, covering an area of over three acres, not a single seed was saved. These little pests devouring them all in spite of scarecrows, shotguns and poison. The following Field Peas were planted: Pea of the Backwoods, Lady Pea, Unknown Pea, Large White Pea, White Prolific Pea, Whippoorwill, Conch & Clay. These were planted on the 11th of May.

The following notes were made during growth:

Pea of the Backwoods, also called the Poor Man's Friend—One foot long, erect, and bearing three to four long and well-filled pods omit a profuse bearer and very early. Berry small and white, with red spots near the eye. Two successive crops were made from seed obtained, the last maturing before last of August.

Lady Pea—A small vine and leaf, running moderately well. Bears a moderate crop of small white peas.

Unknown Pea—A large vine with an abundance of large leaves. Covers the ground very well, but with us gave a small crop of peas.

Large White—A smaller vine than the above but a better

runner. Has small leaves and bears a small crop of large white peas.

Whippoorwill—A coarse vine and a very poor runner, with large leaves. It bears a good crop of long pods containing large speckled peas.

Clay Pea—A small vined good-running pea, but a poor bearer of a yellowish pea, about the size of the Whippoorwill.

Conch Pea—A very heavy runner, forming a thick mat of vines all over the ground, but bearing few or no berries.

Of the above the Clay and Conch are decidedly the best—both for green manuring and for saving for hay. For the table the little Lady Pea seems to be preferred, while the Pea of the Backwoods gives decidedly the best yield of berries.

There were also a number of Mexican beans planted, but owing to the bad condition of the seed, which had been in the Agricultural Museum for some years, only one variety came up. This formed a very heavy vine and bore a profuse crop of small black beans. In the same plat with these beans were planted a few hills each of the Virginia, Georgia and Spanish Peanut. The Georgia did decidedly the best—both as regards the size and quantity.

Besides the above, seven plots of sugar cane were planted, six of which were fertilized and one left unfertilized, in order to find the results of fertilizer. Below is a table giving fertilizer per acre, yield per acre, percentage of Sucrose, Glucose, etc.

| No. | Fertilizer per Acre. | Yield per acre, in tons. | Total solids, | Sucrose, | Glucose, | Purity co- efficient. | Glucose ratio. | Lbs. available sugar upon 70 p. c. extraction. | |
|-----|---|-----------------------------|---------------|----------|----------|--------------------------|----------------|--|--------------|
| | | | | | | | | Per ton. | Per acre. |
| 1 | 500 lbs. Cotton Seed Meal | 28.48 | 17.70 | 15.00 | .87 | 84.75 | 5.80 | 191.7 | 5459 |
| 2 | 500 lbs. Acid Phosphate | 28.56 | 18.10 | 13.95 | 1.48 | 77.07 | 10.61 | 164.2 | 4689 |
| 3 | 500 lbs. Kainite | 32.84 | 16.85 | 13.40 | 1.45 | 79.52 | 10.82 | 157.2 | 5162 |
| 4 | Nothing | 28.84 | 17.50 | 14.2 | 1.26 | 81.14 | 8.87 | 172.3 | 4969 |
| 5 | 500 lbs. Cotton Seed Meal } 500 lbs. Kainite } | 28.32 | 17.55 | 15.2 | .96 | 86.61 | 6.31 | 192.6 | 5454 |
| 6 | 500 lbs. Cotton Seed Meal } 500 lbs. Acid Phosphate } | 27.28 | 17.80 | 14.8 | .86 | 83.14 | 5.81 | 189.1 | 5159 |
| 7 | 500 lbs. Cotton Seed Meal } 500 lbs. Acid Phosphate } 500 lbs Kainite } | 27.08 | 18.35 | 16.0 | .83 | 87.19 | 5.19 | 206.6 | 5595 |

These results are such that no decision as the increase of tonnage due to fertilizers can be drawn. No. 3 gave the largest tonnage and it would suggest at first the benefit of potash to this soil. Upon a closer examination, however, we find that No. 5, in which the same amount of potash again occurs actually falls below its neighbor, No. 4, which was unfertilized. Hence the increased yield cannot be ascribed to the fertilizer. The other results are so nearly identical that it may be said that commercial fertilizers for cane on this soil have this year yielded no increase in tonnage. There is, however, a large increase in sugar content in Nos. 7 and 5. Could the fertilizers have produced these desirable results?

SMALL GRAINS, GRASSES AND CLOVERS.

Early in 1888, roots of the *Texas Blue Grass* (*Poa Arachnifera*) were obtained from Mr. Carlos Reese, Marion, Ala., and planted in checks one foot apart each way. It made a vigorous growth during winter, seeded in May and died down to the ground. In September it reappeared in full vigor. It has now nearly occupied the entire ground and promises an excellent winter pasture. From this plat enough roots have been taken to plant a good size plat elsewhere and in a few years, if this plant fulfills its promise the Station will be able to furnish roots to the public. It is said to furnish an abundance of excellent green grass through the entire winter.

Para grass (*Panicum Barbonode*) was planted at same time upon an adjoining plat to the Texas Blue Grass. The roots were obtained from F. M. Hendry, Fort Myers, Fla. This is emphatically a summer grass, but with wonderful powers of growth. It has large stems which run along the ground, taking root at each joint and sending up simultaneously leaves and smaller stems. Some of these stems grew over twenty feet in length the first season. After it covers the ground its habits are said to change from the prostrate to the erect, and then furnishes a large amount of hay and pasturage. It is highly recommended and the Station is watching its development with interest.

In October, the Station planted five varieties of wheat, two

varieties of oats, two of barley, six of clovers and twelve of grasses. These are also growing finely and hopes are entertained of successful results.

EXPERIMENTS IN CORN.

This crop was planted with two objects: First, to ascertain the variety best suited to this soil and climate; second, to ascertain what fertilizers and in what quantities were needed by corn, on this land. All experiments in this direction were vitiated by depredations of both the cut and bud worm. In order therefore that we might not lose the experiment entirely, the number of stalks on each row were carefully counted and the results from each experiment accurately weighed. By ascertaining from this data the average yield per stalk, then allowing a stalk every two feet and multiplying by the number of stalks there should have been, we can form a fair idea of the yield of each. In order to answer the first question, eighteen varieties of corn were obtained and planted under the same conditions. Accompanying is a tabulated statement, giving names of varieties, yield, etc. Twelve ears of each were carefully weighed. These were shucked and weighed again. Then shelled and corn and cob weighed. In this way the per cent of corn, cob and shuck was obtained for each variety.

| Name of Variety. | Yield per acre in pounds. | Per cent. shuck. | Per cent. cob. | Per cent. shelled corn. | Bushels shelled corn per acre. |
|------------------------------------|------------------------------|------------------|----------------|----------------------------|-----------------------------------|
| Patterson | 4648.62 | 8. | 18.4 | 73.6 | 61. |
| Mosby | 5481.72 | 6. | 17.6 | 76.4 | 74.4 |
| Blount | 5068.96 | 8.6 | 16.7 | 74.7 | 79.6 |
| Alabama | 4894.8 | 10.9 | 18.9 | 70.2 | 61.3 |
| McQuade | 4356.2 | 8.9 | 17.1 | 74.0 | 57.5 |
| White Normandy | 2936.64 | 3.8 | 18.5 | 77.7 | 40.7 |
| White Mexican | 5184.92 | 10.9 | 16.2 | 72.9 | 67.4 |
| Prolific | 5236.2 | 10. | 15.0 | 75. | 70.1 |
| New Madrid | 4894.4 | 4.7 | 18.1 | 77.2 | 67.4 |
| Red Cob Gourd Seed | 4424.96 | 8.9 | 11.1 | 80.0 | 63.1 |
| Champion | 2524.48 | 7.3 | 14.2 | 78.5 | 35.3 |
| New Hickory King | 2590.72 | 8.0 | 12. | 80.0 | 37.0 |
| Mexican Flint | 3716.16 | 7.8 | 15.3 | 76.9 | 51.0 |
| Western Yellow | 4452.8 | 11. | 16.2 | 72.8 | 57.5 |
| Mexican and Creole, Mixed | 3521.76 | 14.4 | 16.0 | 69.6 | 43.7 |
| Yellow Flint | 4933.34 | 10.9 | 18.9 | 70.2 | 61.7 |
| Yellow Golden | 2838.75 | 14.8 | 20.5 | 64.7 | 32.7 |
| Mixture of Red Cob and Mosby | 3815.96 | 9.5 | 13.8 | 77.7 | 52.9 |

All of these were placed under similar conditions, but gave very varying results.

The Blount, with its 79.6 bushels of shelled corn, is in marked contrast with the Yellow Golden, with only 32.7. The foregoing table speaks for itself and renders any remarks superfluous.

The next attempt was to find out the manurial requirements of this soil.

These three questions on as many different plats were asked, both of corn and cotton :

1. "Does this soil need Phosphoric Acid? If so how much and in what form?"

2. "Does it need Potash? How much and in what form?"

3. "Does it need Nitrogen? How much and in what form?"

Question No. 1 was put to plat No. 10.

Twelve experiments with the various Phosphatic Manures were made, and the following table gives the fertilizers used with results:

PHOSPHORIC ACID—PLAT NO. X.

YIELD AND FERTILIZATION PER ACRE.

VARIETY USED—"PATTERSON."

| No. of Expt. | How Fertilized. | Shuck Corn, Lbs. | Shelled Corn, Bushels. |
|--------------|----------------------------------|---------------------|---------------------------|
| 1 { | Basal Mixture [*] | | |
| | 280 lbs. Dissolved Bone..... | 4168.28 | 54.7 |
| 2 { | Basal Mixture..... | | |
| | 560 lbs. Dissolved Bone..... | 4639.96 | 60.9 |
| 3 { | Basal Mixture..... | | |
| | 280 lbs. Acid Phosphate..... | 4496.00 | 59.0 |
| 4 { | Basal Mixture..... | | |
| | 280 lbs. Acid Phosphate..... | 4220.16 | 55.4 |
| 5 { | Basal Mixture..... | | |
| | 560 lbs. Acid Phosphate..... | 4336.08 | 56.9 |
| 6 { | Basal Mixture..... | | |
| | Nothing..... | 4396.00 | 57.7 |
| 7 { | Basal Mixture..... | | |
| | 280 lbs. Bone Meal..... | 4176.76 | 54.8 |
| 8 { | Basal Mixture..... | | |
| | 560 lbs. Bone Meal..... | 4483.92 | 58.9 |
| 9 { | Basal Mixture..... | | |
| | 280 lbs. Bone Meal..... | 3396.00 | 44.6 |
| 10 { | Basal Mixture..... | | |
| | 560 lbs. Bone Meal..... | 4264.12 | 56.0 |
| 11 { | Basal Mixture..... | | |
| | 140 lbs. Gypsum..... | 4439.96 | 58.3 |
| 12 { | Basal Mixture..... | | |
| | 280 lbs. Gypsum..... | 4044.32 | 53.1 |

^{*} Basal Mixture—2-0 lbs. Cotton Seed Meal.
84 lbs. Muriate Potash.

The results above lead to but one conclusion, and that is, that with this stand of corn, one stalk every two feet in the drill, that decaying roots of the old grass sod furnished an abundance of plant food to make a maximum crop. The unfertilized plat yielded 54.8 bushels, while the highest yield of any fertilized plat was only 60.9 bushels—differences that might occur in almost any two plats. Next year a repetition of these manures on the same plat may give more satisfactory replies.

In order to get the answer to Question 2, *i. e.*, Does this soil need potash, etc., we will examine:

PLAT IX—POTASH.

VARIETIES USED—"PATTERSON."

| No. of Expt. ¹ | How Fertilized. | YIELD PER ACRE. | |
|---------------------------|--------------------------------|---------------------|-----------------------|
| | | Shuck corn, lbs. | Shelled corn, bus. |
| 1 | Meal Phosphate,* | 3956.4 | 51.9 |
| 2 | 168 lbs. Kainite..... | 5210.16 | 68.4 |
| 3 | Meal Phosphate..... | 4396.00 | 57.7 |
| 4 | 42 lbs. Muriate Potash..... | 4572.84 | 60.1 |
| 5 | Meal Phosphate..... | 4264.12 | 56.0 |
| 6 | 84 lbs. Muriate Potash..... | 3122.24 | 41.1 |
| 7 | Meal Phosphate..... | 3648.68 | 47.9 |
| 8 | Nothing..... | 4396.00 | 57.7 |
| 9 | Meal Phosphate..... | 4396.00 | 57.7 |
| 10 | 42 lbs. Sulphate Potash..... | 4483.92 | 58.9 |
| 11 | Meal Phosphate..... | 4439.96 | 58.3 |
| 12 | 280 lbs. Acid Phosphate..... | 4220.16 | 55.4 |
| | 196 lbs. Cotton Seed Meal..... | | |
| | 49 lbs. Nitrate Potash..... | | |
| | 280 lbs. Acid Phosphate..... | | |
| | 84 lbs. Cotton Seed Meal..... | | |
| | 98 lbs. Nitrate Potash..... | | |

* Meal Phosphate—280 lbs. Cotton Seed Meal.
280 lbs. Acid Phosphate.

The remarks under Plat 10 are applicable here as under Plat XI., soon to follow.

PLAT XI.—NITROGEN.
VARIETY—PATTERSON.

| No. of Exp't. | Fertilizer Used. | YIELD PER ACRE. | |
|---------------|-----------------------------------|------------------|--------------------|
| | | Shuck corn, lbs. | Shelled corn, bus. |
| 1 | Mixed Minerals* | | |
| | 79.8 lbs. Nitrate Soda | 4396. | 57.7 |
| 2 | Mixed Minerals | | |
| | 158.6 lbs. Nitrate Soda | 5055.4 | 66.4 |
| 3 | Mixed Minerals | | |
| | 53.2 lbs. Sulphate Ammonia | 4396. | 57.7 |
| 4 | Mixed Minerals | | |
| | 106.4 lbs. Sulphate Ammonia | 4068.08 | 53.4 |
| 5 | Mixed Minerals | | |
| | 112 lbs. Dried Blood | 4396.0 | 57.7 |
| 6 | Mixed Minerals | | |
| | 224 lbs. Dried Blood | 4689.72 | 61. |
| 7 | Mixed Minerals | | |
| | 140 lbs. Fish Scrap | 4689.72 | 61. |
| 8 | Mixed Minerals | | |
| | 280 lbs. Fish Scrap | 4068.08 | 53.4 |
| 9 | Mixed Minerals | | |
| | 168 lbs. Cotton Seed Meal | 4747.68 | 62.3 |
| 10 | Mixed Minerals | | |
| | 336 lbs. Cotton Seed Meal | 4255.4 | 56.0 |
| 11 | Mixed Minerals | | |
| | 504 lbs. Cotton Seed | 4396.0 | 57.7 |
| 12 | Mixed Minerals | | |
| | 1008 lbs. Cotton Seed | 4396.0 | 57.7 |

* Mixed Minerals—280 lbs. Acid Phosphate.
84 lbs. Muriate Potash.

It is to be regretted that no conclusions can this year be derived as to the wants of this soil for corn growing. Another and perhaps even another year may be needed to satisfactorily solve this question. In meanwhile the experiments will be continued.

EXPERIMENTS IN COTTON.

The experiments in cotton were of two kinds. 1st. Varieties best adapted to our wants, considering yield of seed cotton, and percentage of lint; and 2d, Manurial requirements. Thirty-eight varieties of cotton, obtained at great labor and cost, were planted and treated as nearly alike as possible. These experiments, together with those elsewhere described, were growing beautifully with promise of large results when the disastrous storm of the 19th August, not only injured but absolutely destroyed them. Many of the full grown bolls nearing maturity, which would otherwise have opened, were completely rotted by the two weeks of incessant rains following the storm. Therefore all of our experiments in cotton were failures so far as instruction is concerned.

Below is a table giving the yield of seed cotton and of lint per acre, together with the percentage of lint.

VARIETIES OF COTTON.

| Name of Variety. | Seed Cotton, Lbs. | Lint, Lbs. | Percentage of Lint. | Remarks. |
|----------------------------|----------------------|---------------|------------------------|-------------------|
| Southern Hope | 950 | 323. | 34. | |
| Bancroft's Herlong | 1140 | 353.4 | 31. | |
| Petit Gulf | 646 | 187.3 | 29. | |
| Allen's Long Staple | 912 | 310. | 34. | |
| Tennessee Silk | 798 | 215.4 | 27. | |
| Boyd's Prolific | 798 | 223.4 | 28. | |
| Peterkin | 570 | 199.5 | 35. | |
| Crawford | 836 | 259.16 | 31. | |
| Hawkins | 836 | 265.52 | 32. | |
| Peerless | 874 | 270.9 | 31. | |
| Dickson's | 696 | 215.7 | 31. | |
| Welborn's Pet | 696 | | ... | |
| King's Improved | 870 | 304.5 | 35. | |
| Hawkins | 608 | 176.3 | 29. | |
| Peterkin | 870 | 304.5 | 35. | Home raised seed. |
| Oat's Cotton | 760 | 250.8 | 33. | Selected seed. |
| Little Brannon | 760 | 304.0 | 40. | Home raised seed. |
| Allen's Long Staple | 722 | 187.7 | 26. | " " " |
| Boyd's Prolific | 798 | 231.42 | 29. | " " " |
| Peterkin | 684 | 205.2 | 30. | " " " |
| Tennessee Silk | 798 | 255.16 | 32. | " " " |
| Martin's Prolific | 779 | 233.7 | 30. | " " " |
| Herlong | 646 | 206.72 | 32. | " " " |
| Jones' Improved | 870 | 261.00 | 30. | " " " |
| Jower's Improved | 608 | 176.32 | 29. | " " " |
| Cherry's Long Staple | 608 | 176.32 | 29. | " " " |
| Shine's Early | 570 | 176.7 | 31. | " " " |
| Jower's Improved | 646 | | ... | Second year seed. |
| Cherry's Long Staple | 532 | 205.84 | 37. | " " " |
| S. B. Maxey | 608 | 176.32 | 29. | " " " |
| Shine's Early | 779 | 233.7 | 30. | " " " |
| Griffin's Improved | 722 | 194.94 | 27. | " " " |
| Taylor's Improved | 874 | 270.9 | 31. | " " " |
| Bancroft's Herlong | 456 | 123.12 | 27. | " " " |
| Pure Brannon | 304 | | ... | |

Besides the above, a plat of "Sea Island" was also planted. This had not begun to mature when the storm killed it outright. These cottons were carefully ginned on an improved twenty-saw gullett gin, with feeder and condenser, made especially to order for this Station. Each variety was weighed into the gin, and seed and lint weighed after.

MANURES FOR COTTON.

Three plats of cane for Nitrogen, one for Potash and one for Phosphoric Acid were devoted to experiments in fertilizing cotton—seeking similar answers to those propounded with corn.

PLAT NO. 12—NITROGEN.
VARIETY OF SEED USED—PETERKIN.

| No of Expt. m't. | Fertilizer Per Acre. | | Yield of Seed Cotton per acre, lbs. | Yield of lint per acre, lbs. |
|------------------|-----------------------------|--|-------------------------------------|------------------------------|
| | | | | |
| 1 | Mixed Minerals * | | 952. | 333.2 |
| 2 | 79.8 lbs. Nitrate Soda | | 862. | 301.7 |
| 3 | Mixed Minerals | | 812. | 284.2 |
| 4 | 53.2 lbs. Sulphate Ammonia | | 644. | 225.4 |
| 5 | Mixed Minerals | | 742. | 259.7 |
| 6 | 106.4 lbs. Sulphate Ammonia | | 504. | 176.4 |
| 7 | Nothing | | 728. | 254.8 |
| 8 | Mixed Minerals | | 756. | 264.6 |
| 9 | 112 lbs. Dried Blood | | 742. | 259.7 |
| 10 | Mixed Minerals | | 728. | 254.8 |
| 11 | 224 lbs. Dried Blood | | 714. | 249.9 |
| 12 | Mixed Minerals | | 504. | 176.4 |
| 13 | 140 lbs. Fish Scrap | | 756. | 264.6 |
| 14 | Mixed Minerals | | 770. | 269.5 |
| 15 | 336 lbs. Cotton Seed Meal | | 700. | 235. |
| 16 | Mixed Minerals | | 602. | 210.7 |
| 17 | 1008 lbs. Cotton Seed | | 560. | 190.0 |
| 18 | Nothing | | 344.4 | 120.5 |

* Mixed Minerals—250 lbs. Acid Phosphate.
84 lbs. Muriate Potash.

In this experiment an attempt was made to find out whether this soil needed Nitrogen to grow cotton? If so, in what form and in what quantity? Nitrate Soda, Sulphate Ammonia, Dried Blood, Fish Scrap, Cotton Seed Meal and Cotton Seed were used to furnish the Nitrogen and each used in such quantities as to furnish respectively 12 and 24 lbs. Nitrogen per acre. Along with them, and without them at periodical distances, we used Mixed Minerals—a mixture of Acid Phosphate and Nitrate of

Potash. The results of these experiments upon their face answer the question that this soil perhaps needs Nitrogen for cotton—since by comparing the experiments with Nitrogen with those without (Mixed Minerals) and there is found in nearly every instance a notable increase. The increase of the Mixed Minerals over the unfertilized plats would indicate their need too. But it must be remembered, that one of the beneficial effects of commercial fertilizers is to hasten the maturity of cotton. After the storm of 10th August, both growth and maturation were destroyed, and only those bolls which had reached maturity at that date were ever picked. What would have been the results had no disaster intervened is a matter of conjecture only. Perhaps the unfertilized cotton might have, towards close of season, caught up with that fertilized, and perhaps on the other hand, with favorable seasons the fertilized cotton, having received such a vigorous impetus in early growth, might have developed into an enormous crop, greatly enhancing the disproportion which existed between it and that unfertilized at the time of the storm. The storm transferred all this to the realm of speculation and left us with doubtful facts upon which we can have opinions but cannot make accurate scientific deductions.

Plat XIII. was devoted to experiments with phosphates under cotton.

PLAT XIII.—PHOSPHORIC ACID.

VARIETY—PETERKIN.

| No. of Experiment. | Fertilizer per Acre. | Yield of Seed Cotton per acre, lbs. | |
|--------------------|---|-------------------------------------|------------------------------|
| | | Yield of Seed Cotton per acre, lbs. | Yield of Lint per acre, lbs. |
| 1 | Basal Mixture* | 854 | 298.9 |
| 2 | 280 lbs. Dissolved Bone..... | 1078 | 337.4 |
| 3 | Basal Mixture..... | 882 | 308.7 |
| 4 | 280 lbs. Acid Phosphate..... | 910 | 318.5 |
| 5 | Basal Mixture..... | 812 | 284.2 |
| 6 | Nothing..... | 560 | 196.0 |
| 7 | Basal Mixture..... | 784 | 274.4 |
| 8 | 280 lbs. Precipitated Dissolved Bone..... | 644 | 225.4 |
| 9 | Basal Mixture..... | 686 | 240.1 |
| 10 | 280 lbs. Precipitated Acid Phosphate..... | 560 | 196. |
| 11 | Basal Mixture..... | 658 | 230.3 |
| 12 | Nothing..... | 588 | 205.8 |
| 13 | Basal Mixture..... | 686 | 240.1 |
| 14 | 280 lbs. Bone Meal..... | 748 | 251.8 |
| 15 | Basal Mixture..... | 560 | 196. |
| 16 | 140 lbs. Gypsum..... | 658 | 230.3 |
| 17 | Basal Mixture..... | 658 | 230.3 |
| 18 | 280 lbs. Gypsum..... | 487 | 170.45 |
| | Nothing..... | | |

* Basal Mixture—280 lbs. Cotton Seed Meal.
84 lbs. Muriate of Potash.

Here again phosphates of all kind, particularly those of a soluble character, have given increased yields; but the same objection of drawing conclusions exist here as under Plat 12, and it is best to await another trial before forming an opinion.

Plat No. 14 is devoted to experiments with different forms and quantities of Potash—asking same questions for cotton as has been asked under corn.

PLAT 14—POTASH.
VARIETY OF SEED—BOYD'S PROLIFIC.

| No. of Experiment. | Fertilizer Per Acre. | Yield of Seed Cotton per acre, lbs | Yield of lint per acre, lbs. |
|--------------------|--------------------------------|------------------------------------|------------------------------|
| 1 | Meal Phosphate*..... | 1022 | 296.38 |
| 2 | 168 lbs. Kainite..... | | |
| | Meal Phosphate..... | 840 | 243.6 |
| 3 | 336 lbs. Kainite..... | | |
| | Meal Phosphate..... | 868 | 251.72 |
| 4 | 42 lbs. Muriate Potash..... | | |
| | Meal Phosphate..... | 910 | 263.9 |
| 5 | 84 lbs. Muriate Potash..... | | |
| | Meal Phosphate..... | 756 | 219.24 |
| 6 | Nothing..... | 700 | 203. |
| 7 | Meal Phosphate..... | 826 | 239.5 |
| | 42 lbs. Sulphate Potash..... | | |
| 8 | Meal Phosphate..... | 644 | 186.76 |
| | 84 lbs. Sulphate Potash..... | | |
| 9 | 196 lbs. Cotton Seed Meal..... | | |
| | 280 lbs. Acid Phosphate..... | 700 | 203. |
| | 49 lbs. Nitrate Potash..... | | |
| | 84 lbs. Cotton Seed Meal..... | | |
| 10 | 280 lbs. Acid Phosphate..... | 854 | 247.66 |
| | 98 lbs. Nitrate Potash..... | | |
| 11 | Meal Phosphate..... | 770 | 223.3 |
| 12 | Nothing..... | 554 | 160.66 |

* Meal Phosphate—280 lbs. Acid Phosphate.
280 lbs. Cotton Seed Meal.

Remarks upon the above experiments are unnecessary. In fact no experiments with cotton this year on this Station are deemed of value. The disastrous storm of the 19th August, unprecedented in its fury and effects, destroyed in a night the cherished hopes and longing anticipations of months. All these experiments germinated well and excellent stands were obtained. The cultivation was very satisfactory and up to the storm the entire crop gave promise of the most decisive results. In a night all were destroyed and expectations of results postponed to another year.

Besides the foregoing work the Station has also undertaken an experiment in rotating a field with Cotton, Corn, Oats and Peas. For this purpose eight acres were accurately laid off,

with roads between each one. Two acres are devoted to each crop, one fertilized yearly and the other unfertilized. Of course, several years will elapse before any results can be obtained.

In closing this report it would be well to say that this Station sees no reason for changing the formulas for corn and cotton published heretofore in its bulletins, and in reply to the numerous inquiries from planters and farmers will here repeat those for cotton, found heretofore so efficacious:

700 lbs. Cotton Seed Meal.
1100 lbs. Acid Phosphate.
200 lbs. Kainite.

Mix thoroughly and apply in a shovel furrow before planting, taking care to mix well with soil, by running a bull tongue through it after distribution. From 200 to 500 pounds per acre are quantities usually recommended. If Cotton Seed is on hand it may be profitably made into a compost, with stable or lot manure and Acid Phosphate, in following proportions:

100 bushels Cotton Seed.
100 " Manure.
1 ton Acid Phosphate.

For sandy land 1000 lbs. Kainite may be advantageously added. Mix well this compost before use and apply from 300 to 1000 lbs. per acre in drill before planting.