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Mississippi Agricultural Experiment Station
Agricultural College, Mississippi.

BULLETIN No. 157.

REPORT OF WORK AT THE
Delta Branch Experiment Station
For 1911.

BY G. B. WALKER.



AGRICULTURAL COLLEGE, MISSISSIPPI.

FEBRUARY, 1912.

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Report of Work at the Delta Branch Experiment Station For 1911.

INTRODUCTION.

The work at the Station for the year 1911 includes general crop or demonstration work with cotton, corn, peas, oats, soy beans, alfalfa, wheat, and vetch; variety work with wheat, corn, and cotton; fertilizer work with corn, cotton, and peanuts; general work in breeding mules, cattle, and hogs; and observations on drainage.

Results and conclusions from the different lines of work are briefly reviewed below.

The season has been a most unfavorable one for practically all crops. The excessive rains during the first three weeks of April prevented the early planting of cotton, and the eight weeks of drought which followed threatened to make early corn a total failure. Then the excessive rains during August, accompanied by the cotton army worm, the boll worm, and the boll weevil, made our cotton crop considerably short of what would have been expected in a normal season. The drought during May made our spring oat crop practically a total failure, but on the other hand gave us an excellent opportunity for harvesting our fall-sown grain crops.

Our crop system was about as follows:

- 67 acres in corn and peas,
- 48 acres in cotton,
- 11 acres in fall oats followed by soy beans,
- 12 acres in spring oats followed by alfalfa in September,
- 12 acres in wheat and vetch followed by soy beans,
- 8 acres in alfalfa,
- 17 acres in orchard and hog pastures,
- 10 acres in various experimental crops,
- 50 acres in pastures, lots, and drives.

CORN.

Of the 67 acres planted to corn all but 15 acres grew cotton the year before and with the exception of three acres none of the land was fertilized. The 15 acres mentioned above had grown corn and peas

for two years previous. The 49 acres that grew cotton the previous year is not highly improved. It includes several acres of stiff, poorly drained land, which lowered our average yield considerably. The average yield for the 67 acres was 46 bushels. This does not represent the actual yield, for in every acre of our corn peas were planted at the rate of two bushels per acre at last plowing and the heavy growth of vines made it impossible for the men to find all the corn in harvesting. The corn that was left was made good use of, however, by the hogs that followed as soon as the harvesting was finished.

Soil preparation.—Since we have so many inquiries as to our methods of preparation and cultivation, though both are entirely local propositions, we shall briefly state our methods below.

For early planting on our well drained lands, we break flat with 12 inch sulky plows as early in fall or winter as convenient, going as deep as we can well plow and turning under as much vegetable matter as possible. The land is left in this shape until a few days before we are ready to plant, when we disc up thoroughly with a double cutaway disc harrow, half lapping each time. Then we harrow crosswise with a heavy section harrow, going as many times as necessary to finely pulverize the soil, then plant on level with a checkrow planter.

Our lands that are poorly drained we break as early in the winter as possible, plowing usually with two-horse turning-plows, putting the land in high eight foot beds. We leave the land in this shape until we are ready to plant, when we run over the beds with the disc harrow, going as many times as is necessary to work up a good seed bed. We then go crosswise the rows with the section harrow, which serves to fine the soil and to drag down the beds. Following the harrow we plant two rows on each bed, either drilling or checking as desired. This method of preparation gives better drainage and permits of earlier planting than would be possible with the land broken flat.

Time of planting.—On lands that are well drained and of a warm nature, we get best results by planting from the first to the tenth of March. We also got good results from corn planted during the first days of May. Mexican June corn, one of our best catch crops, can be planted as late as the last of June with safety. We planted this year one and a half acres of this corn on the twelfth day of July that matured good corn before frost.

Cultivation.—We begin the cultivation of our corn as soon as a crust forms, which is sometimes before the corn gets out of the ground. If a crust is formed before the corn is up well, a great deal of good

can be done by running a weeder crosswise the rows. Usually our first cultivation is given with the side harrow attachment to our two-horse walking-cultivators. After this we use the shovel attachments, to the same cultivator, at first running deep, but with the depth lessened as the corn grows larger. After the corn is too large to use two-horse cultivators, we use a one-horse cultivator, such as the "Planet Junior". We cultivate late and at the last cultivation sow cowpeas broadcast in the middles at the rate of one and a half to two bushels of seed per acre.

We advise checking corn where practicable, as it saves hoeing and more moisture can be conserved when cultivating both ways.

No man can afford to let a single acre of his land that is planted to corn go without peas sown at the last cultivation. The pea is not only a splendid source of revenue, but it fills the soil with nitrogen worth from \$6.00 to \$8.00 per acre per season. In field "A" the 15 acres referred to in the Introduction, we have a splendid demonstration of what a wonderful restorative agent we have in the cowpea on our Delta soils. This field has now been in corn and peas three years and without the aid of a commercial fertilizer, the peas having increased the corn yield from fifteen to twenty bushels per acre annually. The yield on this field this year, notwithstanding a sixty days' drought just at a critical stage, was 71 bushels per acre. We expect to run this field in corn and peas two more years to ascertain whether or not the increase in corn yield will be kept up in the same ratio. Besides the increase in corn yield gotten as a result of peas on the above mentioned land, the pea crop alone in 1910 amounted to \$35.00 per acre.

Fertilizers.—Although we had three acres of corn fertilized, we carried on no particular experimental work with fertilizing corn this year. The three acres fertilized are well drained and of a sandy loam nature. With the exception of one acre, which was in alfalfa, the land grew cotton the previous year. It was given an application of leached barn manure at time of breaking in February, an application of 600 pounds of cottonseed meal per acre when disking seed bed for planting, and an application of 200 pounds of nitrate of soda applied in middles, June 10th. The land was broken in February an average of 10 inches deep and planted on March 15th in drills three and a half feet apart. The corn, which was left as it came up, was very thick, and as a result suffered very severely from the drought that came just at the most critical period of its growth. Two varieties of corn were planted on the three acres, Mosby and Weekley's Improved; one and

a half acres to each variety. The one and a half acres in Mosby yielded 102.5 bushels per acre at a cost of 18 cents per bushel. The Weekley's blew down and rotted so badly before we could harvest it that we were unable to get an accurate measure of the yield. A photograph of this field of corn is shown on front cover of this bulletin.

SMALL GRAINS.

It is generally conceded that the Delta is not suited to the growing of small grains, but such has not been our experience. When either oats or wheat is sown on good, well drained land during October or the first half of November, our yields are always satisfactory, and when these crops are followed by soy beans sown as soon as the land can be put in shape after the grain is removed, from the fifteenth to the last of June, the combined net proceeds from the two crops are usually as good, if not better, than that from an average crop of cotton, and will leave the soil in much better shape for the crop that is to follow.

Oats and soy beans.—In November of 1910 the Station planted eleven acres of fairly well surface-drained loam land in oats, using two and a half bushels of seed per acre. A good stand was secured and they went through the winter in fine shape, ripening the last of May, just in time to escape the effects of a six weeks' drought. The weather was ideal for harvesting and the yield was a most satisfactory one. Being in need of the oats for feeding purposes and not having a thrashing machine at that time, we failed to get a record of the yield on the whole eleven acres, but we measured off one acre of what we



considered to be a fair average of the field and saved the grain until we purchased a thrashing machine in August. From the acre we thrashed 90 bushels of very fine heavy oats.

As soon as the oats were off this eleven acres, we broke the land shallow and on June 29th planted soy beans in rows thirty inches apart, using one and a half pecks of seed per acre. The beans were given two cultivations, going once to a middle with a "Planet Junior" cultivator each time. All but one acre of the beans were cut for hay when the pods began to turn yellow and yielded an average of 5,200 pounds of cured hay per acre. One acre was left until the beans ripened to get the record of bean yield per acre. After losing a good per cent of the beans from shattering, we thrashed 22 1-2 bushels from the acre.



When planting soy beans to be thrashed for seed, it is well to plant where the land is fenced, or where hogs can run on the land for a few days after the bean crop is removed, to pick up the shattered beans, otherwise considerable loss will be sustained.

As a crop for following a grain crop in this section, there are few things that will equal the soy bean. As a hay crop it is fine. When cut at the proper stage and when properly cured, the hay is equal in feeding value to that of alfalfa, and when planted on good land under good conditions will yield an average of two tons per acre. As a bean crop it is also fine. So long as there is a demand for soy bean seed at \$1.50 and up per bushel, it is an excellent crop to grow for seed. As a grazing crop for hogs, there is none better. The green foliage is as rich in protein as red clover and the bean has a higher protein content

than oil meal. In fact we know of no plant having a more useful range of possibilities than does the soy bean.

The Station recommends that crops of fall oats followed by soy beans be given more consideration when planting crop systems for the Delta cotton plantations. Since the boll weevil is a reality with us, it is possible for us to harvest our cotton crops in time to follow with fall oats, which would have been impossible heretofore. Oats do better following cotton than following corn and peas as they are not so apt to lodge.

Wheat and vetch followed by soy beans.—In November of 1910 twelve acres were seeded to wheat and vetch, using three pecks of wheat and one peck of vetch seed per acre. This was cut for hay while the wheat was in the dough stage and gave us an average yield of 2 1-2 tons per acre. This crop was followed by soy beans seeded on July 10th. The beans blighted very badly and gave us a yield of only 1 1-2 tons per acre.



Wheat and vetch sown as mentioned above, from September to November, and cut while the wheat is in the dough stage afford an excellent source of early hay of medium quality.

Variety test of wheat.—On November 3rd, 1910, the Station planted twelve varieties of wheat in plats of one-fifth acre each on good

surface-drained buckshot land. All varieties stood the winter well and matured in nice shape with but little rust. While the wheat was in shocks, a passing train set fire to the field and damaged the grain so badly that we are unable to publish absolutely correct yields, though we estimate from what was left of the varieties that the yields ran from 16 to 35 bushels per acre, with Blue Stem and Klondyke leading.



ALFALFA.

In view of the Station's five years' experience with alfalfa, we look upon it as one of our many safe and profitable crops. We had this year eight acres that were cut five times and averaged four tons per acre for the season. The first week in September we seeded another twelve acres on which we secured a good stand and it now (January, 1912) seems to be going through the winter in fine shape. We find that a well drained and fertile buckshot land is the safest on which to plant alfalfa, also that twenty to twenty-five pounds of seed per acre are sufficient.

Success with alfalfa in the Delta depends almost wholly on getting the land well drained and free from grass and weed seeds. To do this, preparation should be begun in the early spring. An excellent way is to first select the very best and most thoroughly drained piece of land available, break deeply and thoroughly, putting in lands very high and thirty feet wide, plant thickly in peas as soon as danger of frost is over, cut the peas early in July, and break the soil well again keeping

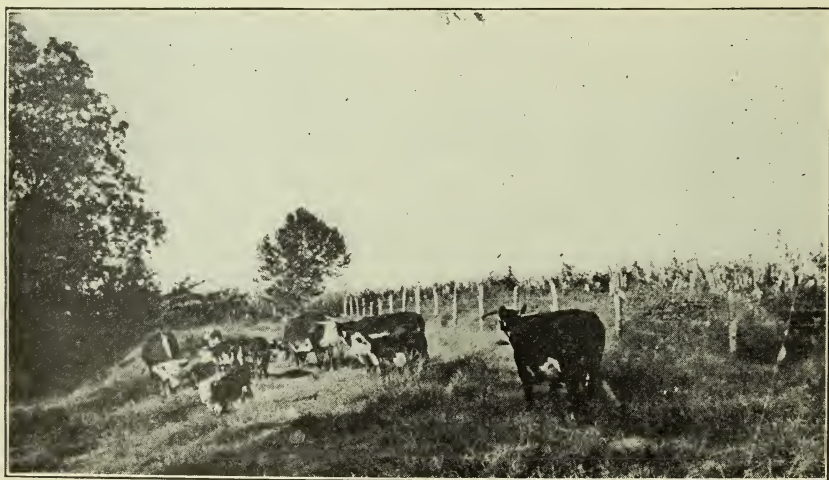
in original lands. Then keep well disked and harrowed until ready to plant during the first days of September. After planting, it is well to open up water furrows at the ends with a spade to aid drainage as much as possible.

Inoculation.—Although it is not necessary to inoculate for alfalfa on our stiff lands, we advise inoculation, particularly if one is in reach of an established alfalfa field for it usually causes a more vigorous growth and we believe it will pay. On loam soils it is very essential. The inoculation is made by sprinkling finely pulverized soil from an established alfalfa field at the rate of from two to four hundred pounds per acre at planting time or soon thereafter.

No Delta planter who has suitable land can well afford not to grow enough alfalfa for feeding his own teams.

CATTLE.

In April of 1910 the Station purchased in Kentucky, for the sum of \$1,000.00, a small herd of registered Hereford cattle. In the lot were five cows, two heifer calves, and a bull. Since their arrival every member of the herd has thrived and it now numbers eighteen. The cattle are kept on white clover and Bermuda pasture from April until November and during this period are fed only a very little at times when pasture is cut short by drought. They are usually turned on fields in November where they remain until about the first of January



when they are brought to the barn and carried through the remainder of the winter on shucks, hay (usually soy bean hay), and a little corn.

Under the above conditions, which are no more than almost any Delta planter can easily provide, the cattle stay fat the year round, and our best calves are made to weigh six to seven hundred pounds at one year old. We have recently sold two yearling bulls for \$150.00 each.

From our two years' experience with these cattle, we do not hesitate to claim that as good cattle can be raised in the Delta as can be raised anywhere in the state, and at a good profit.

Our pastures are on Deer Creek banks and lands that are too wet to be cultivated at a profit. They are set in white clover, Bermuda grass, and a little lespedeza, which make a most excellent pasture combination. We have had no trouble from the cattle tick, for the simple reason that our pastures were freed of ticks before we got our cattle.

There are thousands of acres of back lands in the Delta that can no longer be cropped in cotton at a profit on account of the boll weevil, and are too wet for profitable crops of corn, that would make splendid pastures if sodded to white clover, Bermuda grass, and lespedeza. To those who have lands of this character and are debating what is the best use to make of them, the Station would suggest that consideration be given to the raising of cattle of one of the beef breeds.

MULES.

The Station keeps a jack and five mares for breeding purposes, but we have done no particular experimental work with them this year. The mares range in size from 950 to 1200 pounds, and are all fairly good individuals, three of which are used at light farm work when needed. Only two colts were gotten this spring, one from the 950 pound mare and one from a 1200 pound mare. The colt out of the small mare weighed at foaling 112 pounds, while the one out of the large mare weighed 130 pounds. The colts were weighed again at six months of age and weighed 420 and 496 pounds respectively. Three of the mares are known to be in foal now and we hope to get at least three colts next spring.

The Station also has a horse colt and two mule colts that are now a year and a half old. The mules are very promising youngsters, weighing 789 and 820 pounds. They have been kept since foaling on white clover and Bermuda grass pasture, and since weaning have been fed at nights a small quantity of corn, oats, and good hay. They have cost us from weaning to date, not figuring pasture, approximately \$40.00 apiece.

HOGS.

Although we have raised a considerable number of hogs at the Station this year, we have completed no particularly experimental work with them during the year.

During December we bred to a pure bred Berkshire boar, two pure bred Berkshire sows, and two pure bred Duroc-Jersey sows; and to a pure bred Duroc-Jersey boar, two pure bred Duroc-Jersey sows, and two pure bred Berkshire sows. A record will be kept of the pigs from these sows from birth until they reach the market with a view of finding which is the most profitable market hog, the pure bred Berkshire, the pure bred Duroc, the Berkshire-Duroc cross, or the Duroc-Berkshire cross.

Pastures.—We cannot emphasize too strongly the importance of providing ample pastures for hogs. They cannot be raised at a good profit without it. Hogs should have good pastures every day of the year. The Station keeps from eight to twelve sows and our pasture system is about as follows: Four and a half acres in Bermuda sod in which are the hog houses, four and a half acres seeded in September to rape and red clover, four and a half acres in alfalfa, four and a half acres planted in September to wheat and crimson clover followed by sorghum and soy beans, two and a quarter acres each. In addition to these we plant peas in every acre of our corn and graze them off after the corn is harvested.

There are now grazing on our pea fields sixty head of very fine hogs, which we expect to market the latter part of January at a nice profit.

Quarters.—We have now under construction at the Station a modern hog house with concrete floors throughout and provided with various compartments in which to store feeds, to accommodate sows and pigs, and in which to conduct feeding experiments. There will also be a concrete dipping vat in connection with the building.

ROTATION.

With a hope of finding some system of crop rotation that will keep up the fertility of our Delta soils, can be practiced at a profit, and at the same time may be easily adopted by our Delta planters, we inaugurated at the beginning of this year a rotation experiment including almost everything from continuous cropping of cotton, to a seven year rotation, with oats one year, alfalfa three years, and cotton three years. Included in this work are 31 plats of 1-10 acre

each. The work, of course, has not advanced far enough to report results, but we hope to make these plats of land the most interesting and instructive on the Station, in the course of a few years. We are using no fertilizers in this work and it is our aim for these experiments to be continued indefinitely.

FERTILIZER EXPERIMENTS.

At the beginning of the year a series of fertilizer experiments was inaugurated on 46 plats with the expectation of running the tests for several years, and to give the plots the same fertilizer applications each year.

The land on which these tests are being made is fairly well surface-drained sandy loam soil. It is very uniform and had never before had an application of commercial fertilizer. It has grown nothing but cotton for as far back as we have any record.

Although no definite conclusions can be drawn from the results of one year's work, we give the following tables as the results of our first year's work for what it is worth.

The season was very dry during May and June, which was a very unfavorable condition for fertilizers.

Table I. gives results of plots fertilized with cottonseed meal, acid phosphate, and kainit singly, and in combination with each other as indicated in comparison with unfertilized plots. In making a check an average of plots 1 and 9 is used.

TABLE I.

Plot No.	Fertilizer Application per Acre.	Pounds seed cotton per acre, first picking.	Pounds seed cotton per acre, second picking.	Total pounds seed cotton per acre.	Increase due to fertilizer.	Value of increase at 4.5 cents per pound.	Cost of fertilizer per acre.	Value of increase over cost of fertilizer per acre.
1	Unfertilized.....	1333	250	1585	0	0	0	0
2	200 lbs. C.-S. Meal.....	1400	233	1633	101	\$ 4.54	\$ 2.50	\$ 2.04
3	150 lbs. Acid Phosphate..	1200	250	1450	-82	-3.69	1.05	-4.74
4	50 lbs. Kainit.....	1266	216	1482	-50	-2.25	0.32	-2.57
5	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate..	1366	166	1532	0	0	3.55	-3.55
6	200 lbs. C.-S. Meal, 50 lbs. Kainit.....	1550	216	1766	234	10.53	2.82	7.71
7	150 lbs. Acid Phosphate.. 50 lbs. Kainit.....	1550	133	1683	151	6.79	1.37	5.42
8	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate 50 lbs. Kainit.....	1533	216	1749	217	9.76	3.87	5.89
9	Unfertilized.....	1283	200	1483	0	0	0	0
$\frac{1+9}{2}$	Average of Unfertilized....	1307	225	1532	0	0	0	0

Table II. gives results of test with lime alone and in combination with other elements.

TABLE II.

Plot No.	Fertilizer Application per Acre.	Pounds seed cotton per acre, first picking.	Pounds seed cotton per acre, second picking.	Total pounds seed cotton per acre.	Increase due to fertilizer.	Value of increase at 4.5 cents per pound.	Cost of fertilizer per acre.	Value of increase over cost of fertilizer per acre.
1	200 lbs. C.-S.Meal, 150 lbs. Acid Phosphate, 50 lbs.Kainit, 1000 lbs. Lime.....	1400	266	1666	150	\$ 6.75	\$ 5.12	\$ 1.63
2	Unfertilized.....	1316	200	1516	0	0	0	0
3	1000 lbs. Lime.....	1166	200	1366	-150	-6.75	-1.25	-8.00

Our normal application is 400 pounds per acre consisting of 200 pounds of cottonseed meal, 150 pounds acid phosphate, and 50 pounds of kainit, and in Table III. once normal and twice normal is compared with no fertilizer.

TABLE III.

Plot No.	Fertilizer Application per Acre.	Pounds seed cotton per acre, first picking.	Pounds seed cotton per acre, second picking.	Total pounds seed cotton per acre.	Increase due to fertilizer.	Value of increase at 4.5 cents per pound.	Cost of fertilizer per acre.	Value of increase over cost of fertilizer per acre.
1	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 50 lbs. Kainit.....	1483	166	1649	100	\$ 4.50	\$ 3.87	\$ 0.63
2	Unfertilized.....	1366	183	1549	0	0	0	0
3	400 lbs. C.-S. Meal, 300 lbs. Acid Phosphate, 100 lbs. Kainit.....	1533	200	1733	184	8.28	7.74	0.54

Table IV. gives results of varying amounts of cottonseed meal, acid phosphate, and kainit, other elements being normal, with no fertilizer.

TABLE IV.

Plot No.	Fertilizer Application per Acre.	Pounds seed cotton per acre, first picking.	Pounds seed cotton per acre, second picking.	Total pounds seed cotton per acre.	Increase due to fertilizer.	Value of increase at 4.5 cents per pound.	Cost of fertilizer per acre.	Value of increase over cost of fertilizer per acre.
1	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 50 lbs. Kainit.....	1533	183	1716	283	\$12.73	\$ 3.87	\$ 8.86
2	Unfertilized.....	1233	200	1433	0	0	0	0
3	600 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 50 lbs. Kainit.....	1516	316	1832	399	17.95	8.87	9.08
4	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 50 lbs. Kainit.....	1533	133	1666	83	3.73	3.87	-0.14
5	Unfertilized.....	1350	233	1583	0	0	0	0
6	200 lbs. C.-S. Meal, 450 lbs. Acid Phosphate, 50 lbs. Kainit.....	1416	166	1582	-1	-0.04	5.97	-6.01
7	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 50 lbs. Kainit.....	1616	166	1782	333	14.98	3.87	11.11
8	Unfertilized.....	1283	166	1449	0	0	0	0
9	200 lbs. C.-S. Meal, 150 lbs. Acid Phosphate, 150 lbs. Kainit.....	1533	133	1666	217	9.76	4.51	5.25

Table V. gives results of test of nitrogen in the different forms with entire application at planting time, and with half at planting time, and half applied July 20th.

TABLE V.

Plot No.	Fertilizer Application per Acre.	Pounds seed cotton per acre, first picking.	Pounds seed cotton per acre, second picking.	Total pounds seed cotton per acre.	Increase due to fertilizer.	Value of increase at 4.5 cents per pound.	Cost of fertilizer per acre.	Value of increase over cost of fertilizer per acre.
1	400 lbs. C.-S. Meal at planting time.....	1333	350	1683	-150	-\$6.75	\$5.00	-\$11.75
2	200 lbs. C.-S. Meal at planting time, and 200 lbs. C.-S. Meal on July 20th.....	1416	400	1816	-17	-0.76	5.00	-5.76
3	200 lbs. C.-S. Meal at planting time, and 80 lbs. Nitrate of Soda, July 20th.....	1916	300	2216	373	16.78	4.50	12.28
4	Unfertilized.....	1633	200	1833	0	0	0	0
5	160 lbs. Nitrate of Soda at planting time.....	1833	300	2133	300	13.50	4.00	9.50
6	80 lbs. Nitrate of Soda at planting time, and 80 lbs. Nitrate of Soda, July 20th.....	1733	750	2483	650	29.25	4.00	25.25
7	80 lbs. Nitrate of Soda at planting time, and 200 lbs. C.-S. Meal, July 20th.....	1433	523	1956	123	5.53	4.50	1.03

The land on which the above tests were made was broken flat on February 17th, the fertilizer applied, and the land bedded on April 28th, and planted on May 1st in Rublee cotton. Good stands were secured on all plots. The boll weevil appeared in considerable numbers in this cotton the last of July and damaged the crop approximately 15 per cent.

DRAINAGE.

Of the many propositions that confront our Delta farmers today that of drainage is the most serious. If cotton is to be grown under

boll weevil conditions it must be planted and a good stand secured early. This is impossible under conditions that now usually exist. Our lands must be drained if they are to be made warm and crops planted early in the spring.

The Station is doing considerable work in drainage, both in surface and tile. The entire Station farm is surface-drained by means of wide shallow ditches. The rows all run into these ditches and the surface water is quickly carried off.

Tile drainage.—During the winter of 1908 about 50 acres of the farm was tiled. The drains are doing good work. They have practically doubled the productive capacity of the land affected by them, but we believe that the tile is not doing what it should—due likely to having been placed at too great a depth. The proper spacing and depth at which tile should be placed on Delta lands is a question of much importance, and we hope to begin work in the immediate future to determine this matter. We are now making plans to inaugurate a system of vertical tile drainage at the Station during the present winter, and will report results in due time.

PEANUTS.

The Station began some experiments in the spring with peanuts, which included time of planting, space of rows, and some fertilizer tests, but on account of failing in several attempts to get good stands, due to dry weather, our results are not deemed trustworthy and will not be published in detail. With the stands we were able to secure in the spacing test, best results were gotten from rows three feet apart and the hills about sixteen inches apart in the drill.

In the time of the planting test we got the best yield from the plot planted the first week in June.

We got no increase due to fertilizers. The land on which this test was made is a fertile sandy loam and the average yield on all the plots was 67 bushels per acre. The white Spanish peanut was planted in all the tests.

The peanut makes a most excellent free pasture for hogs, and the Station urges that more consideration be given this crop when planning crop rotations for hog pastures on Delta farms.

COTTON.

Since the boll weevil is now a reality on most of our Delta farms, cotton can no longer be grown at a profit under old time plantation

conditions. Cotton does not, however, cease to be an important crop, and to bear a most important relation to Delta farming.

It is only now that we realize that diversification and rotation are the foundation of all permanent agriculture and come to regard cotton as we should always have regarded it,—as a principal money crop, after the fertility of our soil has been kept up, and the farm made self-sustaining by other crops.

Yields.—We cultivated this year 48 acres in cotton and harvested 24,277 pounds of lint per acre. The season was very unfavorable for cotton all the way through. The continued wet weather during April prevented early planting and the long drought which followed made our stands very unsatisfactory. One-fifth of our cotton acreage was planted on April 26th, and the remaining four-fifths was not planted until May 1st, 2nd, and 3rd.

Boll weevils were found in fairly large numbers the last week of July and did considerable damage before the end of the season. In some of the fields as much as 15 per cent damage was done by the weevil, but in others the damage was not so great.

Of the 48 acres in cotton, six acres were in Rublee, 23 in Cleveland Big Boll, 12 1-2 in Columbia, 6 1-2 in variety tests, including 23 varieties and various other experimental cottons. The Rublee cotton is one inch in staple, the Cleveland Big Boll, 1 1-16 inches, and the Columbia, 1 3-16 inches.

With the exception of 3 2-5 acres of the land planted in Rublee cotton, none of the land was fertilized. The land that grew Rublee and Columbia was in cotton the previous year, the 23 acres that grew Cleveland Big Boll grew corn and peas, and the 6 1-2 acres on which the variety cotton grew was in oats followed by Mexican June corn the previous year.

Cultivation.—Although one of the main requisites for growing good crops of cotton is rich land, there is nothing that influences a cotton crop more than does cultivation. No rule can be laid down and followed in cultivating a crop. It must be varied to suit the season and no two seasons are alike. There are a few rules, however, that must be adhered to very closely if cotton is to be grown at a profit under boll weevil conditions. These are thorough and early preparation, early planting, and rapid cultivation.

We begin our preparation in the winter by plowing the land in beds, plowing as deep as we well can. The land is left in this shape until early spring, when we re-bed, making sure it is done long enough

before we are ready to plant for the land to settle and become thoroughly firm. This early preparation is very essential, more so now than ever, since the boll weevil is here, for, to make cotton profitably under the fire of the weevil, a good stand must be secured early, and this is impossible on poorly and freshly prepared land. We throw our beds up in good high shape, which insures good drainage and early warming of the soil.

We give our first cultivation as soon as possible after the cotton is up to a stand, with side-harrow attachments to double cultivators, or with single side-harrows. The hoes follow immediately behind the harrows thinning the cotton to a stand.

Our second cultivation is usually with the same harrow, or cultivator as is used in first cultivation and is done as soon as possible after the cotton is thinned. The cultivations are continued as rapidly as is necessary to keep grass and weeds in check and to conserve moisture. We use double cultivators with shovel attachments until the cotton is too large for double cultivators, after which we use a single cultivator such as the "Planet Junior," until the cotton begins to open. We advise late cultivation, particularly if the season is dry.

Spacing.—The proper spacing of cotton is a question of special interest to every man who grows cotton, and is a question we are asked hundreds of times every year. We tested at the Station this year three, three and a half, four, five and six foot rows. On all rows the stalks stood from 18 inches to 24 inches in the drill. The best yield was gotten from the three and a half foot rows, with second best from the three foot rows, third, from four foot rows, fourth from five foot rows, and sixth from six foot rows.

We expect practically a maximum infestation of boll weevils next year and under such conditions we expect to give special attention to spacing, both of the rows and the stalks in the drill.

Variety test of cotton.—In the following table is given a list of 23 varieties of cotton tested at the Delta Branch Station in the year 1911, with data which show results obtained from each variety. In this report is contained some valuable and interesting information, and it is hoped that every cotton farmer in the state, particularly those in the Delta will study carefully the showing made by the different varieties. In the column containing pounds seed cotton per acre at the first picking, will be found a key to the comparative early maturing qualities of the different varieties, a quality that seems to be very essential for a variety, if it is to be grown, at a profit under

boll weevil conditions. The conditions under which this test was made are similar to those existing over almost all the Delta and from this report the farmer should be able to get some indications of the varieties best suited to his conditions. Unfortunately there are no seed available of the "Express" cotton, the variety that took first place, but the Delta Station and others will likely have a few seed for distribution in another year or two.

Table VI.---Variety Test of Cotton.

NAMES OF VARIETIES.	Date of first blooms.	Character of foliage.	Pounds seed cotton per acre, 1st pick, Sep. 30.			Pounds seed cotton per acre, 2nd pick, Nov. 2.			Total yield seed cotton per acre.			Percentage of lint.		Length of staple according to Leland classification.	Character of lint.	Price of lint per pound middling grade.	Value of lint cotton per acre.	Value of seed per acre, at \$18.00 per ton.	Total value of lint and seed per acre.	% of stand secured	Rank as to money value
			lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	INCHES.								
Rublee	Jun 27	Very light	1235	275	1510	498	33	1	1	Good, strong, even	9 3/4	\$48.55	\$9.10	\$7.65	95	3					
Broadwell's Double Jointed	Jun 28	Very light	1125	225	1350	445	37	5-8	5-8	Very poor, uneven	8 3/4	31.71	8.14	44.85	98	20					
Covington-Toole	July 2	Very light	915	395	1310	484	37	1/2 to 5-8	1/2 to 5-8	Fairly good, and even	9 3/4	47.16	7.43	54.62	98	8					
Truitt's Ninety-Day	Jun 29	Very light	1255	275	1530	489	32	1/2 to 5-8	1/2 to 5-8	Poor and uneven	8 3/4	40.34	9.37	49.71	98	14					
Sprull	July 2	Very d'nse	580	330	910	282	31	1	1	Fairly good and even	9 3/4	27.50	5.65	33.15	80	23					
Trice	Jun 26	Light	1390	225	1615	484	30	7-8	7-8	Fairly good and even	9 1/2	45.98	11.08	57.06	97	5					
Simpkins	Jun 29	Very light	1290	165	1455	480	33	1/2 to 5-8	1/2 to 5-8	Poor in every respect	8 3/4	39.60	8.77	48.37	98	17					
King	Jun 26	Very light	1285	200	1485	519	35	1/2 to 5-8	1/2 to 5-8	Poor in every respect	8 3/4	42.82	8.60	51.42	98	12					
World's Wonder	Jun 28	Light	1080	380	1460	438	30	1-1-16	10 1/4	Good, strong, even	10 1/4	44.89	9.20	54.09	95	10					
Dixie	July 1	Light	925	470	1395	446	32	2 1/2	2 1/2	Poor, undesirable	8 3/4	37.79	8.54	45.33	97	19					
Rowden 116	Jun 28	Medium	1040	350	1390	463	33 1/2	1-1-16	10 1-16	Very good	10 1-8	46.88	8.34	55.22	92	7					
Money Maker	July 2	Light	860	345	1205	445	37	7-8	7-8	Poor and undesirable	8 1/2	37.82	6.84	44.66	95	21					
aCook, from Exp. Station	July 1	Dense	1115	380	1495	538	36	1/2	1/2	Undesirable, any tr'd.	8 1/2	44.38	8.61	52.99	95	11					
Cook, from Cook	July 1	Dense	985	315	1300	455	35	3/4	3/4	Wasty	8 3/4	39.81	7.60	47.41	95	18					
aCleveland, from Exp. Sta.	July 1	Dense	965	330	1295	430	34	7-8	7-8	Very wasty and unev.	9 1/2	40.85	7.78	48.63	92	16					
Cleveland, from Cleveland	July 2	Dense	980	385	1365	455	33 1/2	1-1-16	10 1-16	Fairly good and even	10 1-8	46.07	8.10	54.17	90	9					
Triumph, from Wade	Jun 29	Dense	995	340	1335	480	36	1-1-16full	10 1-16full	Good, strong body	10 1-8	48.60	7.70	56.30	95	6					
Triumph, from Mebane	Jun 28	Dense	985	360	1345	510	38	1-1-8	1-1-8	Very good and even	10 3/4	54.82	7.51	62.33	93	2					
Lone Star	July 2	Dense	830	375	1205	420	35	1-1-8 full	1-1-8 full	Good heavy body and staple	12	50.40	7.06	57.46	90	4					
Express	Jun 28	Very light	1475	220	1695	474	28	1-1-8 full	1-1-8 full	Even, ex. heavy body	12	56.88	10.98	67.86	98	1					
Sunflower	Jun 29	Light	755	270	1025	256	25	1-5-16	1-5-16	Good, silky and str'ng	17	43.52	6.92	50.44	95	13					
Columbia	Jun 29	Dense	725	325	1050	315	30	1 1/4	1 1/4	Good body, strong and even	13 1/2	42.52	6.61	49.13	92	15					
Mississippi Silk	July 2	Light	540	250	790	189	24	1-7-16	1-7-16	Good body and staple	19 1/2	36.85	5.41	42.26	95	22					

a From Experiment Station, A. and M. College, Agricultural College, Miss.

The land on which this test was made is a tract of four and three-fifths acres of characteristic Deer Creek sandy loam soil, being only fairly well surface-drained, and not highly improved. It grew oats followed by Mexican June corn the previous year.

The land was broken flat the first week in March, put into beds four feet apart in April, and planted on May 1st. One row of each variety was planted in the order in which the varieties appear in the table, and in this order repeated five times. The planting was done in this manner to obviate any difference there might be in the soil. There was one-fifth acre planted to each of the varieties and our yields per acre are computed on this basis.

The cotton was planted just at the beginning of a long drought and as a result poor stands were secured of some of the varieties, particularly those varieties having large seed. The stand in no case, however, was so bad as to justify replanting.

This field of cotton was attacked by two broods of the cotton army worm, by the boll worm, and by the boll weevil, each of which did considerable damage to the crop.

Samples of lint cotton from each of the varieties were classed by both the Greenville Cotton Company of Greenville, Miss., and the McGee-Dean Cotton Company of Leland, Miss., and our valuations are made from information furnished by these people. The Experiment Station is greatly indebted to the cotton firms mentioned above for the assistance rendered by them.

AVAILABLE BULLETINS AND CIRCULARS.

The following bulletins and circulars of the Station may be had on request:

No.

Bulletins.

- 60—Value of Cotton Seed to the Farmer.
- 84—Report of Field Work at College Station for 1903.
- 90—San Jose Scale.
- 91—Inspection and Analyses of Commercial Fertilizers.
- 92—Beef Cattle.
- 93—Peach and Plum Culture.
- 94—Report of Work at McNeill Branch Station for 1905.
- 95—The Dairy Cow.
- 104—Inspection and Analyses of Cotton-Seed Meal.
- 107—Pork Production at the Delta Station.
- 114—Inspection and Analyses of Cotton-Seed Meal.
- 119—Report of Work at the Delta Branch Station for 1907 and 1908.
- 121—Experiments in Feeding Beef Steers.
- 122—Report of Work at the Holly Springs Branch Station for 1908.
- 125—Inspection and Analyses of Commercial Feeding Stuffs.
- 127—Inspection and Analyses of Cotton-Seed Meal.
- 128—Inspection and Analyses of Cotton-Seed Meal.
- 129—Sugar Cane for Syrup Making.
- 132—The Soils of Mississippi.
- 133—Inspection and Analyses of Commercial Feeding Stuffs.
- 135—Cotton 1909.
- 137—Inspection and Analyses of Commercial Feeding Stuffs.
- 138—Inspection and Analyses of Commercial Feeding Stuffs.
- 139—The Boll Weevil in Mississippi, 1909.
- 140—Cotton Diseases in Mississippi
- 141—Control of Diseases of Fruits, Flowers and Vegetables.
- 142—Inspection and Analyses of Commercial Fertilizers.
- 143—Inspection and Analyses of Cotton-Seed Meal.
- 144—Inspection and Analyses of Commercial Feeding Stuffs.
- 145—Inspection and Analyses of Commercial Feeding Stuffs.
- 146—Suggestions for Growing Home Fruits.
- 147—Apple Growing in Mississippi.
- 148—Inspection and Analyses of Cotton-Seed Meal.
- 149—Inspection and Analyses of Commercial Feeding Stuffs.
- 150—Inspection and Analyses of Commercial Fertilizers.
- 151—Inspection and Analyses of Cotton-Seed Meal.
- 152—Inspection and Analyses of Commercial Feeding Stuffs.
- 153—Inspection and Analyses of Commercial Feeding Stuffs.
- 154—Inspection and Analyses of Commercial Feeding Stuffs.
- 155—Recent Cotton Experiments.
- 156—Inspection and Analyses of Cottonseed Meal.
- 157—Report of Work at the Delta Branch Experiment Station for 1911.
- 158—Report of Work at McNeill Branch Experiment Station for 1907-1911.
- 159—Clearing Pine Lands.
- 160—The Cut Over Lands of South Mississippi.

Circulars.

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| Asparagus. | Insect Pest Law. |
| Blackleg. | Underground Waters of Mississippi. |
| Boll Weevil. | Hairy Vetch. |

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