

3-1-1907

Report of work at the Delta Station for 1907-8

J. W. Fox

Follow this and additional works at: <https://scholarsjunction.msstate.edu/mafes-bulletins>

Recommended Citation

Fox, J. W., "Report of work at the Delta Station for 1907-8" (1907). *Bulletins*. 709.
<https://scholarsjunction.msstate.edu/mafes-bulletins/709>

This Article is brought to you for free and open access by the Mississippi Agricultural and Forestry Experiment Station (MAFES) at Scholars Junction. It has been accepted for inclusion in Bulletins by an authorized administrator of Scholars Junction. For more information, please contact scholcomm@msstate.libanswers.com.

Mississippi Agricultural Experiment Station.

BULLETIN NO. 119.

MARCH, 1907.

REPORT OF WORK AT THE DELTA STATION FOR 1907-8.

~~~~~

BY J. W. FOX.

---

---

This bulletin gives a summary of the work at the Station for three years, and conclusions given are the result of our experience covering that period, unless the statement is made for a particular season. The three years vary greatly as to rainfall and temperature during the growing season.

The season of 1906 was favorable for both cotton and corn. Heavy fall rains and wind damaged both crops to some extent. The season of 1907 was extremely unfavorable to both cotton and corn through March, April and May. The temperature was much below normal. During June, July, August and September the conditions were very favorable. 1908 was a wet year and an unfavorable crop season in our section. The three years will average as somewhat unfavorable for this immediate section.

We have 200 acres in cultivation on the Station farm. In 1906 about one-fourth of the land was rented under a contract which existed when the land was purchased. During 1907 and 1908 the cropping system was approximately as follows:

- 20% of the land grew corn and peas,
- 44% cotton,
- 18% hay crops,
- 5% hog pasture,
- 5% Bermuda pasture,
- 1% young orchard,
- 1% truck crops,
- 6% various experimental crops and driveways.

The hay crops consisted of oats and wheat (followed by cowpeas), alfalfa, red clover and sorghum. The corn land was planted in peas just before the last working and the peas grazed off with hogs. Thus about one-half of the land is being improved each year.

It is proper to state that the Station property was an old run-down cotton farm. No attempt had been made to keep up the fertility of the soil. Twenty per cent of it was too wet to cultivate profitably. The above rotation was planned with a view of producing each year money crops, supplying the place with its feed, and, at the same time, improve the land.

### CORN.

The corn was planted on the unimproved part of the place. This was done in order to fertilize the land with peas.

The average yield without fertilizers has been thirty-nine bushels per acre. On five acres in 1908, planted after corn and peas the previous year, an average of forty-seven bushels was made. On one acre fertilized with ten loads of stable manure and 300 lbs. cottonseed meal, the yield was seventy-two bushels.

**Time of planting.**—For loam land, well drained, the first twenty days in March is a good time to plant. For stiff land and land that is not well drained we have had better results with that planted the latter half of May. If planted during the intervening period, insects, especially the Bud worm, are liable to damage the stand.

**Method of preparing the land.**—For early planting, we have practiced two methods. Both have given satisfactory results. On particularly well drained cuts, where there is a gradual fall and no depressions, and much of the Delta land lies this way, the land may be flat broken during the winter. At planting time disc it, setting the disc at a sharp angle and half lapping. Weight the disc harrow if necessary so that it will cut deep. Follow with heavy smoothing harrow, cross harrowing if necessary, and plant level.

The second method is better for land that has not perfect drainage. It consists in breaking the land in eight-foot beds. When ready to plant, run the disc harrow on the bed and follow with smoothing harrow. Plant two rows on each bed. This plan provides drainage for one side of each row. Also, the land will be practically level when corn is laid by.

For May planting, break early and either re-break in April or keep land well disced and harrowed to keep the land free from grass and in good condition to plant. Plant level at this season.

**Cultivation.**—Corn may be drilled or checked. We prefer checking for two reasons. The corn can be kept clean with less labor, and, after our heavy spring rains, the land can be more thoroughly cultivated by plowing both ways. It can be checked on the double bed, referred to above, by taking up the marker and driving the planter down the center of the bed. We use the double walking cultivators. These do thorough work and the cost of making the crop is cheapened. Corn should be cultivated often and thoroughly. Cultivate deep during the early part of the season and shallow after the roots get out in the row. After the corn is too large to permit the use of the double cultivator, for the last plowing, we use single cultivators. Cultivate late. This conserves moisture and keeps the grass out. Sow one bushel of peas per acre just before the last cultivation.

**Varieties.**—It is very important that Southern grown seed be used. Northern seed should never be used except for early feed. Southern grown seed will make more corn, and sounder corn, and the weevils will not trouble it as they do the corn grown from the Northern seed. Certainly all the corn used on the plantation should be grown. Not only can it be raised much cheaper than it can be bought, but we must have the peas to put humus and nitrogen into the soil. Further, if the farm is fenced, the pea crop can be harvested by hogs, and a considerable revenue derived. By a test in 1908, the details of which are given in revised bulletin No. 107, \$10.00 per acre was made by grazing a corn field with hogs.

The statement is frequently made that corn is not a profitable crop in the Delta. If the land is indifferently prepared and the cultivation of the corn neglected for that of cotton, as is frequently the case, this statement may be true. That it is not necessarily true, many good Delta farmers have already thoroughly demonstrated.

### HAY CROPS.

**Oats and Peas.**—One of the most satisfactory hay crops which we have grown is fall sown oats followed by cow-peas. This can be relied on as a perfectly safe crop for this section. Red Rust Proof seed oats should be used, and the crop should be seeded in October, or early November. The oats are cut with the mower, when just coming into the dough stage. They are ready to harvest the latter part of May. The land is then either plowed or disced both ways, and harrowed, and the peas planted either broad cast or in drills three feet apart. We prefer the latter method. We usually cultivate twice with double cultivator. The seed saved by this method will

more than off-set the cost of cultivation, and more hay of a better quality can be made. A better seed crop is made by drilling and cultivating.

The average yield of hay from the two crops for the season has been three and one half tons. On an acre of oats planted after corn and peas, 5,200 pounds of hay was cut. The yield of pea hay has been as high as 4,600 pounds per acre. Oats should follow cotton rather than corn and peas. They are liable to lodge if sown after a heavy pea crop. Further, this gives a saner rotation, as it gives cotton after peas. The entire crop of cotton could not be harvested in time to put in oats, but a sufficient area could be picked out for this purpose.

Oats would be profitable as a grain crop in connection with the pea hay crop following. Oats may be followed by corn or cotton the same season, but this is not advisable, as too great an area is already being planted to an exhaustive crop. As an experiment in 1907, five acres of oats was followed by cotton. The cotton was planted the third day of June and was fertilized with 300 lbs. cottonseed meal per acre. The yield was 508 pounds of lint per acre.

**Alfalfa.**—From three years experience with alfalfa, we do not hesitate to recommend it as a profitable hay crop if planted properly on the right character of land. Our average yield has been 6,600 pounds of cured hay per acre. The yield on fresh land or land improved by peas will be greater than this.

Well drained buckshot land is best suited to alfalfa. Fall planting is much safer than spring planting. In fact, spring planting will mean failure, generally, in this section. Fresh buckshot land not badly infested with crab grass, might be successfully planted in the spring, but even on such land fall planting is much safer.

The land should be thoroughly broken in winter or early spring, put it into thirty-foot lands. Sow to peas, thick in April, and mow for hay in July. Immediately plow the land, break thoroughly, and keep the field in lands as originally plowed. Keep well disced and harrowed until about September 1st, and plant. If the land is prepared in this way, we will have no fall too dry for seeding.

Twenty pounds of seed per acre is abundantly sufficient. Cover with smoothing harrows.

**Inoculation.**—A few bushels per acre of finely pulverized soil from an established alfalfa field, sprinkled over the ground when the seed are sown, will greatly help the growth of alfalfa. This inoculation is not absolutely essential for our stiff lands, but it will cause a vig-



orous growth from the start, and is worth while, even on this class of soil. For loam land, inoculation is essential to success. Some planters are growing alfalfa successfully on loam land, without artificial inoculation, but it is after the crop has been plowed up and re-planted one or more times, or after the field has become inoculated of itself.

We strongly insist on fall planting, early fall planting, and, also, that the ground be broken from four to six weeks before time to plant, and kept well harrowed until planting time. Alfalfa will not grow if planted on freshly plowed land. A well broken but firm soil, with the upper two inches well pulverized, is the ideal seed bed.

We suggest inoculation for all Delta soils, and insist on it for loam soils.

Alfalfa will yield for us from three to five tons of hay per acre, is easily cured, and is worth 25 per cent. more than timothy for feeding to farm stock. Timothy gets its high market value from the fact that it is an excellent feed for livery and fast driving horses.

If, therefore, you are paying \$16.00 per ton for timothy hay to feed to your farm teams, alfalfa hay, or cow pea hay, is worth \$20.00 per ton, and should be so figured in planning the crop rotation.

**Sorghum.**—For wet land that is unsafe for corn or cotton, we advise sorghum for hay. Break broadcast in broad lands and sow three bushels of seed per acre in May or June. Cut for hay when heads begin to turn brown.

**Wheat and Hairy Vetch.**—Sown together in the early fall, this makes excellent winter grazing and also makes a good hay crop if stock are taken off about the first of April. The crop should be cut for hay when wheat is just coming into the dough stage. It can then be followed by cow peas. A beardless variety of wheat should be sown.

**Red Clover.**—Red clover grows well on both loam and buckshot land. We use it in connection with rape for a hog pasture. We have also harvested good hay from it, but in view of our other more suitable hay plants, we do not advise its general use as a hay crop. On the loam land, the stand is broken during the hot weather of August and it is necessary to re-seed each year.

Another source of hay in the Delta is the pea crop grown in corn. This is harvested after the corn is pulled and makes a fine quality of forage. We do not practice this method, however, but let the hogs eat the peas, or pick them for seed, and then turn the vines under for fertilizer. At least two thirds of the fertilizing value of the pea crop is in the vines and seed and the remainder in the stubble and roots.

With our variety of hay plants, it is not necessary that a single bale of hay should be shipped into the Delta. When it is done, it is simply a matter of choice, the planters preferring to raise cotton to buy hay.

### COTTON.

The important relation that cotton bears to Delta farming can hardly be overestimated. That it is the greatest staple money crop that can be grown in any section of our country will not be denied. This fact has led to our one crop system, which, of course, is wrong both in principle and practice, not only for our section, but for any section. The single crop system is not peculiar to our section. In every farming district there is some one crop which pays better than any other, and it is a matter of history that this crop has been raised to the practical exclusion of all others as long as the fertility of the land would permit. Diversification has come to those sections as a necessity and not from choice.

We do not advocate the exclusion of cotton from our cropping system, nor do we fear that any one thing, nor a combination of circumstances, will ever cause it to become an unprofitable crop. It is only when we come to regard it as the principal surplus money crop, after the farm has been made self-sustaining, so far as all feed crops are concerned, and the subordinate money crops selected always with the view of preserving the fertility of our lands, that our Delta will come into its own as the garden spot of the agricultural world. It is then that our lands will be worth \$150.00 and \$200.00 per acre, as their wonderful fertility amply justify.

**Yield.**—During the three years, we have cultivated 231 acres in cotton, and have harvested 115,250 pounds of lint. This gives an average production for the entire period of 498.9 pounds of lint per acre. In 1906 the area in cotton was 53 acres and the yield was 467 pounds of lint per acre. In 1907 we cultivated 90 acres and the yield was 539 pounds. In 1908, the area in cotton was 88 acres and the yield was 477.2 pounds per acre. Approximately 25% of the acreage was in cotton from 1 3-16 inches to 1 7-16 inches in length, and the remainder in short staple. About 40% was fertilized with 300 lbs. of cottonseed meal per acre, 20% followed corn and peas, and the remainder was not fertilized and was grown on land that had not been improved except as to drainage and cultivation.

**Cultivation.**—It must be remembered that the land under discussion is old land which had not been well plowed. For new land,

this method of preparation, and, to a certain extent, the cultivation should undoubtedly be somewhat different.

Where cotton was to follow cotton, the land was generally bedded in the winter or early spring. Our aim is to have the beds thoroughly settled and firm before planting time. The entire ground was broken, usually with six furrows to the row. Some cuts were flat broken early. In the latter case, a short time before planting, the land was laid off in rows with three mules to a ten-inch middle burster. The advantage of this latter plan is that the land can be more thoroughly broken. The disadvantage is, that should the spring be wet the land does not dry out as quickly as when bedded, the temperature is lower, and, therefore, the time of planting may be delayed. For an early crop, undoubtedly, the better plan is to put the land up into as high beds as possible some time before the planting season.

At planting time, heavy harrows are run ahead of the planters and the beds knocked off until they are only about half as high as is generally customary to have them. If the harrow does not sufficiently reduce the height of the beds, a drag is used. This planting on a low bed we think very important. The cultivation can be more nearly level, thus conserving moisture in the summer, when it will be needed. The first cultivation is given as soon as possible after the cotton comes to a stand. Either the double cultivators, with the fenders attached, are used, or a single cultivator, made similar to a side harrow. The hoeing is done after the cultivators. We do not use turning plows to "bar off" cotton except in extreme cases. Where cotton is barred off with the turning plow, particularly if it is closely done, as is generally the case, too much dirt is taken away, it falls down after the hoes, and the growth is checked. If no other damage is done, the crop is made several days late. However, if the crop gets in the grass because of too much rain, or from any other unfortunate cause, the turning plow is to be relied on and used freely. In such a case the two horse middle burster is also an excellent implement.

The cultivation is continued as rapidly as necessary to keep the soil stirred and the grass subdued. The double cultivators are used principally. During the early part of the season two horse middle bursters are used as needed to keep middles clean. Later they are laid aside and the five-toothed cultivators, single horse, are run in the middle if necessary. The cultivation gets shallower as the roots of the cotton get out in the row. Small buzzard wing sweeps are used on the double cultivators. After the cotton gets too large to plow with the double cultivators, single cultivators are used. The cultivation



is continued until the cotton is locked in the rows. Cotton can hardly be cultivated too late provided it is plowed very shallow so as not to disturb the roots.

The most critical part of the cultivation of cotton is the latter part. After bolls begin to form, with heavy foliage, it needs moisture in abundance. If the cultivation is stopped too soon, the ground bakes and the moisture evaporates. If cotton is plowed at this time with a turning plow the ground also dries out, and the roots are cut. With the heavy top and crop of bolls to support, the reduced root system cannot supply the plant food and moisture. To restore the balance, the plant sheds its forms and young bolls. Much of the August shedding could be prevented by late cultivation.

While we believe old land that is deficient in humus and nitrogen should be thoroughly and deeply prepared in order that every possible pound of plant food be made available, new land abundantly supplied with humus and with an excess of nitrogen should be treated in a different way. This land will grow too large a stalk. By very shallow preparation, plowing just as little as possible, in order to make a seed bed, and cultivating very shallow and no oftener than is absolutely necessary to keep down the weeds, less plant food will be made available, there will be less moisture for the cotton and the excessively large stalk will be avoided.

**Spacing.**—It is not possible to say just how much distance cotton should have, because of the difference in the fertility of soils. On our old land, which is producing about one bale per acre, rows four feet apart with the cotton about  $2\frac{1}{2}$  feet in the rows has given the best results. Wider spacing has caused a lessening of the yield. As the land is made richer more distance will be necessary.

**Checking cotton.**—In 1908 we planted thirteen acres of checked cotton. The land was in corn and peas the previous year, the peas having been grazed off by hogs and the vines and stubble turned under in January. It was disced and harrowed in April and again in May. The cotton was planted level  $3\frac{1}{2}$  feet each way, with a two-row combination cotton and corn check planter, the 23d of May. A good stand was secured. It was thinned to one stalk to the hill on a part of the cut, and to two stalks on the remainder. It was plowed both ways with double cultivators. The last two plowings were given with the single cultivators, one trip to the row. No hoeing was necessary. The cotton grew to an average height of  $6\frac{1}{2}$  feet and the spacing

was entirely too close for the existing conditions. The large growth was the result partly of the peas and the thorough preparation and cultivation and partly from the excessive August rain-fall which was much above normal. These heavy rains also greatly reduced the yield, coming as they did, just as the late cotton was blooming freely. The yield was 492 pounds of lint per acre. The cost of working this cut was reduced about \$1.50 per acre saved in hoeing.

Checking cotton level is not recommended except for exceptionally well drained land. Where an early crop is desired, this method is not advisable. That it saves labor and also stimulates the growth of the plant, because of the more thorough preparation and cultivation of the land, is true. We shall try checking on double beds next year.

**Long and Short Staple.**—The relative yield of different kinds of cotton, considered according to different lengths of staple, is a subject of general interest to Delta planters. It is a well known fact that this section is especially adapted to the growing of long cotton. It is important to know what may be considered the normal difference in yield of the representative varieties of different lengths. That the relative yield will vary somewhat from different soils and for different seasons is quite probable.

In the test we used eight varieties of well known merit. Two were one inch, two, one and one-eighth, two, one and three-sixteenths, and two, one and seven-sixteenths. The following yield per acre for each staple is the average of the two varieties for the season of 1907. 1 inch, 1825 pounds of seed cotton, 645 pounds of lint:

1 1-8 inch, 1780 pounds of seed cotton, 570 pounds of lint;

1 3-16 inch, 1728 pounds of seed cotton, 510 pounds of lint;

1 7-16 inch, 1500 pounds of seed cotton, 430 pounds of lint.

**Varieties.**—The following table gives the results of a comparison of fourteen varieties made in 1908.

| NAME.                    | 1st      | 2d       | Total                         | Total                       | Staple. |
|--------------------------|----------|----------|-------------------------------|-----------------------------|---------|
|                          | Picking. | Picking. | Seed Cot-<br>ton per<br>Acre. | Lint<br>Cotton<br>perAc re. |         |
|                          | Lbs.     | Lbs.     | Lbs.                          | Lbs.                        | Inches. |
| Cleveland Big Boll ..... | 1228     | 275      | 1503                          | 548                         | 1 1-16  |
| Lewis' Prize .....       | 1015     | 397      | 1412                          | 517                         | 1       |
| Cook's Improved .....    | 987      | 308      | 1295                          | 495                         | 7-8     |
| Triumph .....            | 987      | 308      | 1296                          | 463                         | 1 1-16  |
| Ingram.....              | 881      | 367      | 1248                          | 420                         | 1 3-16  |
| Black Rattler .....      | 805      | 303      | 1108                          | 377                         | 1 3-16  |
| Keno .....               | 801      | 571      | 1372                          | 377                         | 1 3-16  |
| Sunflower .....          | 859      | 333      | 1192                          | 367                         | 1 7-16  |
| Red Leaf .....           | 702      | 313      | 1015                          | 368                         | 1 1-8   |
| Strickland .....         | 521      | 557      | 1078                          | 366                         | 1 1-8   |
| Columbia .....           | 787      | 308      | 1095                          | 358                         | 1 5-16  |
| Griffin .....            | 794      | 286      | 1080                          | 355                         | 1 7-16  |
| Wells .....              | 719      | 365      | 1084                          | 344                         | 1 5-16  |

### FERTILIZERS.

There is an increasing interest in the question of using fertilizers in the Delta. Many planters are taking the view, that because this soil is naturally fertile is no reason why its capacity to grow crops should not be increased, if it can be done so profitably. It is simply a business proposition, and in order to proceed in a business way, the planter wants to know what fertilizers are needed, and how and when to apply.

The land on which the tests were made has been cropped in cotton for many years. A part of it is loam soil and is well drained. A test was also made on stiff buckshot land. While this is fairly well surface-drained, it is inclined to be wet in the spring. The variety of cotton used in the test is a short staple and prolific.

**Results.**—The average increase from 300 lbs. of high grade cotton-seed meal per acre for the three years has been 106 pounds of lint cotton. We have not been able to increase the size of the crop nor its earliness by the use of either phosphorus or potash. The phosphorus was applied in the form of 14% Acid Phosphate. Both the Muriate of Potash and Kainit were used. These fertilizers were tested each year alone, and in combination with each other and with meal. It must be remembered that our tests were made on old land. That

the result might be different on new land, or old land made rich in nitrogen by the use of peas, is possible.

The increase from the application of 300 pounds of cottonseed meal to the stiff buckshot land was 36 pounds of lint cotton per acre. This is not sufficient to make the use of the meal profitable on this character of land. Nor has peas proved so beneficial to this land as to the loam land. When it is thoroughly drained by tiling the results may be different.

**Fertilizers for corn.**—300 pounds of cottonseed meal per acre has given an average increase of seven and one-half bushels. When corn is 60c per bushel or higher, the application of meal is profitable.

**Method of applying meal.**—For cotton, we have had best results when the meal is applied in the drill at planting time. The land should be bedded sometime before planting and the beds firmed by rain. Run the fertilizer distributor on the beds, putting the meal about three inches deep. Follow with the harrow to reduce the height of the beds and plant. There will be no bad effects from the immediate contact of the seed and meal. For corn, it is best to apply the meal on each side of the rows after the corn is from two to three feet high. The meal is best applied with a fertilizer distributor.

**Peas as a fertilizer.**—A test was made in 1907 and 1908 to determine the value of peas planted in corn as a fertilizer for cotton the following year. The seed were picked and the vines and stalks turned under in the winter. The increase attributable to the peas was 110 pounds of lint cotton per acre.

Undoubtedly, the proper way to maintain the fertility of Delta lands is to adopt a rotation which includes corn and peas and leguminous hay crops. The peas do not interfere with the corn crop. If picked for seed or grazed with hogs, they are a valuable money crop. In addition to supplying nitrogen, the only element of fertility which seems to be needed for our old lands, they add humus which is absolutely essential for a maximum crop on any soil.

#### DRAINAGE.

**Surface drainage.**—The farm has been surface drained with broad shallow ditches, made either with a two-horse road machine or drag road scraper. The rows run out into these ditches which quickly carry the water off, while they occupy very little ground, being used as turn rows. They are so constructed that a team can cross them or turn in them at any point. Ditches should never be made with spade and shovel for two very good reasons: First, this method is too expensive; and, second, the dirt must be put in



the wrong place, and, consequently, water cannot get into the drains.

Every large plantation should have both a standard and a small two horse road machine, and small farms should have a two-horse machine; both should be supplied with drag-road scrapers. With these implements and good teams and intelligent supervision, drainage in the Delta is really an easy proposition because there is generally at hand a natural outlet and a sufficient fall. There are some sections that should form drainage districts to secure outlets; this is being done in some localities under the present law, and this question will receive more attention in the near future.

**Tile drainage.**—About fifty acres of the farm was tiled in December, 1908. While it is too early to report on the effect of this drainage, it is carrying off the surface water satisfactorily and we expect good results from this work.

Tiling, if properly done, may be regarded as a permanent improvement, and its effectual work has passed the experimental stage. Besides carrying off the surface water, tiling aerates and loosens the soil. It makes possible earlier planting. It also conserves moisture in summer. Much interest is being manifested in the subject in the Delta and this interest will rapidly grow as the good effects are seen.

#### **TRUCKING.**

No attempt has been made to do general trucking at the Station. We have grown, on a limited area, Irish potatoes, sweet potatoes, turnips, strawberries and sugar cane. These crops have all done well. The yield from Irish potatoes was 172 bushels per acre in 1907. The crop was followed by peas for hay. In 1908 the Irish potato crop was followed by turnips sown in August. The turnips made 250 bushels per acre and sold for 60c per bushel.

Sugar cane for syrup is a promising crop. A mill will be located in our immediate vicinity next year and we will make a test of the yield of syrup.

Judging from our limited experience, and also from the growth of vegetables in the home garden, the loam land of the Delta is undoubtedly excellent for trucking.

#### **HOGS.**

In Bulletin No. 107 which is available for distribution from the Mississippi Experiment Station, Agricultural College, Miss., we give a full account of our work with hogs.

We strongly urge the growing of hogs in the Delta and believe that they fit admirably into our rotation and add a valuable money crop, at the same time enabling us to improve the land.