12-1-1927

# Report, Holly Springs Branch Experiment Station, 1927

C. T. Ames

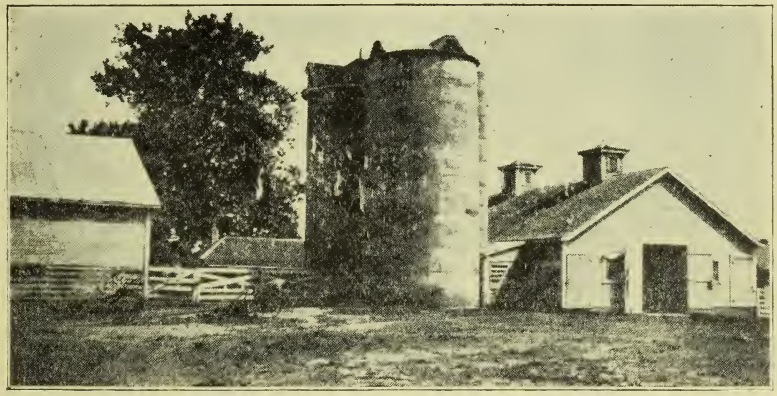
Otis B. Casanova

BULLETIN NO. 253 DECEMBER, 1927

# REPORT
# HOLLY SPRINGS BRANCH EXPERIMENT STATION 1927

By

C. T. AMES AND OTIS B. CASANOVA



Station Dairy Barn

MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

A. and M. College, Mississippi

J. R. Ricks, Director

# Report Of Holly Springs Branch Experiment Station 1927

The work of the Holly Springs Branch Station has been conducted along the line towards the development of successful and progressive agriculture for this section of the state. While this station is located only about twenty miles south of the Tennessee line, the soils are very similar for more than 200 miles south of this place. This section is known as the Brown Loam Area. Results obtained from experiments with fertilizers conducted for several years in the northeastern hill section of the state, including the Pontotoc Ridge, indicate very similar soil requirements. More work has been done this season than any time within the past history of this station. The effect of the work done here can be seen on many farms in the state in the use of fertilizers, varieties of farm crops, spacing of cotton, cultural methods of farm crops and in dairying and poultry work.

The seasons the past year have not been very favorable for crops, due to too much rain during the early spring and summer. This section was in the edge of the rain belt that caused the greatest overflow in the Mississippi Valley within the past history of this country.

## INSECT DAMAGE

On highly fertilized lands of the station planted to cotton, the cotton hopper destroyed the bottom crop and the boll weevil destroyed most of the top crop, leaving only the middle crop for harvesting. The seasons were ideal for boll weevils and they did heavy damage. Presquare poisoning was not done as only a few weevils were found early in the season. It is felt that if a mixture of two pounds of sulphur to one pound of calcium arsenate, as recommended by Mr. Coad of the U. S. Government Insect Control, had been dusted at the first squaring of the cotton, both the cotton hopper and the boll weevil damage would have been greatly reduced. After the infestation reached 10%, calcium arsenate was dusted on the plants, but poor results were obtained due to the poison being washed off by the frequent showers. The growing season for cotton was three weeks later than usual this year. Unless we have cold weather, near zero, of several days duration this winter, a heavy infestation of weevils may be expected in the spring.

## DRAINAGE

Controlling surface water on the farms of the South is of first importance. The growing of legumes and the use of farm manures will avail but little when surface water is uncontrolled. After fencing a farm, the first work should be to control surface water on all lands, including those used for pasture. County agents are ready to assist in this work. Hill soils will rapidly decrease in fertility when cultivated, regardless of the care used in running off rows, if terraces with slight fall are not used to conduct the excessive water slowly to the main drains during a heavy rain. This work is inexpensive and should supersede all other work on the farm. Any land in the state can be

terraced between the time the crops are gathered in the fall and the time to plant the next crop in the spring, with the labor and teams used in cultivating the land.

## SOIL IMPROVEMENT

Soil improvement has always had special attention at this station. Almost every acre on the farm grows either a summer or a winter legume each year. Soybeans are grown in all plantings of corn and either winter vetch, crimson clover or Austrian winter pea is grown with small grain in all cotton middles and after hay crops.

Special attention has been given to the use of fertilizers under cotton, corn, sweet potatoes and other crops, also cotton spacing tests, varieties of cotton, corn, potatoes, sorghum, lespedeza, vetch, soybeans, stock beets, fruits, pecans and other crops. Fertilizer tests with alfalfa, including both spring and fall plantings have also been made.

Dairying, poultry and pasture making have had their places in the year's work.

## COTTON

The requirements for growing cotton successfully are: a fertile soil, the judicious use of fertilizers, proper cutural methods adapted to the several cotton growing sections and insect control. The public is in a very receptive mood for using improved methods, as can be seen in increased crop yields.

Hill or rolling land should not be broken in the fall unless seeded to a winter cover crop. If not planted to cover crops, it is advisable to leave all of the vegetable matter on the surface during the winter rains to check soil washing. Sod land can be turned in the fall and left rough. Valley land may be broken in the fall if the surface water is properly controlled. Deep plowing on hill land in the fall will not prevent soil washing in this section. A winter cover crop gives the best protection for all kinds of land during the winter months. The dairy cow can be grazed on such crops when the condition of the soil will permit.

**Preparation of Land**—There are several ways land may be prepared for cotton. One way is to run a furrow down the water furrow of the old rows and throw two furrows together on this furrow, or list the land. Fertilizer is applied in or on this list ten days or two weeks before planting time. Then break the middles out with a buster and allow the land to remain in this condition until planting time. At planting time harrow down to slightly elevated rows ahead of the planter.

The second way is to turn the land broadcast. About two weeks before planting time, lay off the rows and apply the fertilizer, which may be done with the same machine. The row is completed by throwing out the middles with a buster. Horrow and plant as given above.

The third and last way suggested is to put the land in rows at any time before planting, harrow down and apply the fertilizer in the top of the row, cover with a harrow and allow to remain until planting time. At planting time harrow ahead of the planter.

An ideal seed bed is one prepared and fertilized two weeks be-

fore planting time and settled by a rain. In practice it is frequently the case that preparation, fertilization and planting is, of a necessity, done at very short intervals.

**Cotton Planting Time**—In this latitude the time to plant cotton is usually between April 25 and May 10. Cotton should be planted when the ground is warm enough to cause quick germination. A good stand and earliness are very great factors in the amount produced. It is better to plant medium early and secure a good stand than to plant early and get a poor stand. Late plantings and good stands are very unsatisfactory, often causing a failure in the crop. One of the cheapest and best ways to increase the yield of cotton per acre is to get a good stand of cotton.

A good stand on hill land is from three to four stalks in bunches per foot.

A good stand on valley land is two to three stalks in bunches per foot.

A properly balanced fertilizer is necessary to secure the best results with the above spacing. From our past results, blocking the cotton and having the blocks about twelve inches apart is not very far from good spacing.

**Depth of Planting**—Cotton seed should be planted very shallow in a medium elevated row. It is advisable to use from one and one-half to two bushels of seed per acre. The earlier the planting is made the more seed should be used. A good practice is to run the planter twice down each row, using half the quantity of seed each way. The first trip will plant the seed a little deeper than the second. This method will increase the chances for a stand, which is one of the greatest factors in the production of cotton.

**Cultivation**—As soon as the plants are established sufficiently not to be injured, cultivation should begin. Thin or block out as soon as possible and give frequent, shallow cultivation. The practice of this station is to cultivate as soon a spossible after each rain, but if the rains are far apart it may be necessary to cultivate more often—something like once every ten days or two weeks.

**Boll Weevil Control**—If any weevils can be found just as the first squares are about half grown, calcium arsenate applied in the bud of the cotton will kill them. (The Association of Southern Agriculturalists suggests twenty weevils per acre before poison is used.) Either the sweet poison or the dust form will do the work. Calcium arsenate applied in the dust form, either with hand or power machine, is very satisfactory. A second application about ten days later should be made if any weevils can be found. Results from this station indicate that in this latitude this second application is usually due about the time most of the weevils are out of hibernation, which means that most of the weevils are destroyed. Our results in 1923 warrant this conclusion and this year was somewhat similar in rainfall to 1923. It is felt that a mistake was made this year in not using the pre-square method of poisoning. Should the weevils become plentiful later in the season, poisoning should begin with calcium arsenate dust as soon as 10% squares infestation is found. Mr. B. R. Coad of the U. S.

Department of Insect Control, recommends three applications four days apart, beginning with 10% infestation. After the three applications, the weevils should be held down to about 20% infestation by later dustings.

## VARIETY TESTS

Two variety tests were made, one on valley and the other on hill land. The soil used in the valley land test was improved brown loam. The hill test was on brown loam table land of ordinarily fertility. Each variety was planted in one-row plots, repeated four times. The valley test rows were 123 feet long and the hill test rows were 200 feet long.

Plantings were made April 26 and 27. The seasons were unfavorable for cotton, spring and summer being wet. Frost was about three weeks late. The cotton hopper and boll weevils did considerable damage.

**Fertilizer**—Both plantings were fertilized with 600 pounds of an 8-4-4 home mixture fertilizer applied under the seed before planting.

The following tables, 1 and 2, give results of these tests.

TABLE 1—COTTON VARIETY TEST, VALLEY LAND

| Variety | Pounds per acre | | Lint data | | | Total value per acre | Rank in value | Percent seed cotton first picking |
|---|---|---|---|---|---|---|---|---|
| | Seed cotton | Lint | Percent | Length | Cents per lb. | | | |
| Miss. Stat. Trice | 2173.3 | 639.0 | 29.4 | 1 1/16 | 21.71 | 164.73 | 3 | 37.9 |
| Cleve. Wann. | 1528.1 | 521.1 | 34.1 | 7/8 f | 19.59 | 119.20 | 27 | 17.9 |
| Cleve. 5 | 1535.7 | 497.6 | 32.4 | 1 1/16 f | 22.03 | 127.27 | 22 | 18.3 |
| Cleve. 54 | 1636.9 | 528.7 | 32.3 | 15/16 f | 20.31 | 126.22 | 23 | 24.4 |
| Cleve. Wilson | 1667.3 | 515.2 | 30.9 | 15/16 | 20.09 | 123.09 | 26 | 29.9 |
| Cleve. Piedmont | 1679.9 | 532.5 | 31.1 | 15/16 | 20.09 | 124.68 | 24 | 28.5 |
| Half and alf, Mahon | 1571.7 | 594.1 | 37.8 | 13/16 f | 18.75 | 127.89 | 20 | 27.8 |
| Cook 1010 | 1583.8 | 612.9 | 38.7 | 7/8 | 19.25 | 134.49 | 16 | 24.4 |
| Willis | 1710.3 | 540.5 | 31.6 | 15/16 | 20.09 | 128.48 | 19 | 23.8 |
| Acala | 1642.0 | 559.9 | 34.1 | 1 | 20.71 | 134.36 | 17 | 25.4 |
| Miller | 1773.5 | 587.0 | 33.1 | 1f | 21.09 | 143.97 | 11 | 29.0 |
| D. & P. L. No. 4 | 1424.4 | 512.8 | 36.0 | 1f | 21.09 | 123.65 | 25 | 15.6 |
| D. & P. L. No. 8 | 1442.1 | 540.8 | 37.5 | 1 | 20.71 | 127.32 | 21 | 20.2 |
| Deltatype No. 5 | 1447.2 | 432.7 | 29.9 | 1 1/4 | 27.25 | 135.16 | 15 | 16.4 |
| Delfos 910 | 1672.3 | 515.1 | 30.8 | 1 1/16 f | 25.81 | 152.62 | 7 | 39.0 |
| Delfos 1374 | 1968.3 | 570.8 | 29.0 | 1 3/16 f | 25.81 | 171.08 | 2 | 32.5 |
| Delfos 911 | 1760.9 | 526.5 | 29.9 | 1 1/8 f | 23.81 | 146.34 | 10 | 37.8 |
| Delfos 1341 | 1771.0 | 561.4 | 31.7 | 1 1/8 f | 23.81 | 154.23 | 6 | 38.0 |
| Delfos 6102 | 1932.9 | 577.9 | 29.9 | 1 1/8 f | 23.81 | 160.64 | 5 | 36.3 |
| D. & P. L. No. 6 | 1444.6 | 482.5 | 33.4 | 1 3/16 | 24.81 | 136.07 | 14 | 30.5 |
| Express, Light. | 1685.0 | 519.0 | 30.0 | 1 3/16 | 24.81 | 148.58 | 9 | 62.4 |
| Lone Star 168 | 1798.8 | 582.8 | 32.4 | 1 1/16 f | 22.03 | 149.06 | 8 | 35.6 |
| Lone Star 65 | 2001.2 | 650.4 | 32.5 | 1 1/16 | 21.71 | 164.16 | 4 | 42.1 |
| Delfos No. 2 | 1763.4 | 530.8 | 30.1 | 1 1/16 f | 22.03 | 137.89 | 12 | 29.7 |
| Acala No. 5 | 1530.7 | 543.4 | 35.5 | 1f | 21.09 | 131.38 | 18 | 27.6 |
| Acala No. 8 | 1669.8 | 561.1 | 33.6 | 1f | 21.09 | 137.19 | 13 | 31.5 |
| Stoneville No. 1 | 2099.9 | 707.7 | 33.7 | 1 1/16 | 21.71 | 177.31 | 1 | 33.7 |

TABLE 2—COTTON VARIETY TEST, HILL LAND

| Variety | Pounds per acre | | Lint data | | | Total value per acre | Rank in value | Percent seed cotton first picking |
|---|---|---|---|---|---|---|---|---|
| | Seed cotton | Lint | Percent | Length | Cents per lb. | | | |
| Miss. Sta. Trice | 1185.9 | 397.3 | 33.5 | 1 | 20.71 | 95.68 | 25 | 76.5 |
| Cleve. Wann. | 1053.6 | 394.0 | 37.4 | 7/8 | 19.25 | 87.06 | 27 | 63.4 |
| Cleve. 5 | 1201.0 | 417.9 | 34.8 | 1 | 20.71 | 99.86 | 21 | 56.6 |
| Cleve. 54 | 1194.3 | 428.8 | 35.9 | 7 1/8 f | 19.59 | 97.01 | 24 | 65.9 |
| Cleve. Wilson | 1170.8 | 408.6 | 34.9 | 7/8 f | 19.59 | 93.00 | 26 | 66.9 |
| Cleve. Piedmont | 1085.4 | 382.1 | 35.2 | 7/8 | 19.25 | 85.51 | 28 | 65.4 |
| Half & Half, Mahon | 1338.3 | 567.4 | 42.4 | 1 3/8 | 18.38 | 117.40 | 3 | 70.7 |
| Cook 1010 | 1299.8 | 542.0 | 41.7 | 1 3/16 | 18.38 | 112.49 | 10 | 66.7 |
| Willis | 1336.7 | 457.2 | 34.2 | 7/8 f | 19.59 | 104.50 | 16 | 66.5 |
| Acala | 1284.7 | 472.8 | 36.8. | 1 5/16 f | 20.31 | 109.83 | 13 | 64.9 |
| Miller | 1244.5 | 434.3 | 34.9 | 1 | 20.71 | 103.71 | 17 | 58.9 |
| D. & P. L. No. 4 | 1165.8 | 432.5 | 37.1 | 1 | 20.71 | 102.04 | 19 | 59.5 |
| D. & P. L. No. 8 | 1142.4 | 443.3 | 38.8 | 1 5/16 f | 20.31 | 101.91 | 20 | 60.7 |
| Deltatype Webber | 1117.2 | 348.6 | 31.2 | 1 3/16 | 24.81 | 99.55 | 22 | 49.3 |
| Delfos 910 | 1288.1 | 425.1 | 33.0 | 1 1/8 f | 23.81 | 115.89 | 6 | 66.7 |
| Delfos 1374 | 1407.0 | 454.5 | 32.3 | 1 1/8 f | 23.81 | 124.41 | 1 | 66.9 |
| Delfos 911 | 1324.9 | 446.5 | 33.7 | 1 1/16 f | 22.03 | 113.29 | 9 | 71.6 |
| Delfos 1341 | 1318.2 | 464.0 | 35.2 | 1 1/16 f | 22.03 | 116.74 | 5 | 72.3 |
| Delfos 6102 | 1381.9 | 461.6 | 33.4 | 1 1/16 f | 22.03 | 117.34 | 4 | 64.4 |
| D. & P. L. No. 6 | 1194.3 | 438.3 | 36.7 | 1 1/8 | 23.31 | 115.02 | 7 | 68.6 |
| Express, Light. | 1212.7 | 400.3 | 33.0 | 1 1/8 | 23.31 | 107.10 | 15 | 81.0 |
| Lone Star 168 | 1271.3 | 453.9 | 35.7 | 1 1/16 | 21.71 | 112.44 | 11 | 70.6 |
| Lone Star 65 | 1261.3 | 449.0 | 35.6 | 1 1/16 | 21.71 | 111.29 | 12 | 68.7 |
| Delfos No. 2 | 1190.9 | 394.2 | 33.1 | 1 1/16 | 21.71 | 99.12 | 23 | 67.5 |
| Acala No. 5 | 1226.1 | 464.7 | 37.9 | 1 | 20.71 | 109.18 | 14 | 62.2 |
| Acala No. 8 | 1206.0 | 435.4 | 36.1 | 1 | 20.71 | 103.27 | 18 | 67.5 |
| Stonville No. 1 | 1442.2 | 513.4 | 35.6 | 1 f | 21.09 | 124.22 | 2 | 72.5 |
| Stoneville No. 2 | 1273.0 | 474.8 | 37.3 | 1 f | 21.09 | 113.71 | 8 | 75.9 |

**Cotton Variety Test—Five Year Average, 1923-27**—There is no doubt but that the careful selection of varieties of cotton and the judicious use of the proper fertilizer will add to the income of the grower more than anything else under their control.

Tables 3 and 4 give the average pounds of lint cotton for five years on both valley and hill land tests, also the average money value and the length of staple and percent of lint for 1927. The varieties are placed in the tables in the order of their money value.

TABLE 3—COTTON VARIETY TEST, VALLEY LAND, FIVE YEAR AVERAGE

| Variety | Lint data | | | Value lint and seed |
|---|---|---|---|---|
| | Yield | Per-cent | Length | |
| Delfos 6102 | 544.3 | 29.9 | 1 1/16 f | 149.77 |
| Delfos 631 | 516.6 | 31.3 | 1 3/16 | 147.61 |
| Lone Star 65 | 582.2 | 32.5 | 1 1/16 | 144.51 |
| Miss. Sta. Trice | 538.9 | 29.4 | 1 1/16 | 136.75 |
| Willis | 585.5 | 31.6 | 15/16 | 131.30 |
| Deltatype Webber | 432.7 | 29.9 | 1 1/4 | 129.65 |
| Cleve. Wann. | 496.6 | 34.1 | 7/8 f | 129.15 |
| Express, Light. | 359.5 | 30.8 | 1 3/16 | 129.15 |
| D. & P. L. No. 4 | 614.5 | 36.0 | 1 f | 124.53 |
| Cleve. 54 | 513.9 | 32.0 | 15/16 f | 123.78 |
| Half & Half, Mahon | 579.8 | 37.8 | 13/16 f | 122.75 |
| Miller | 549.0 | 32.1 | 1 f | 119.43 |
| Acala No. 5 | 541.7 | 35.5 | 1 f | 119.04 |
| Cleve. Piedmont | 496.6 | 31.7 | 15/16 | 110.06 |

TABLE 4—COTTON VARIETY TEST, HILL LAND, FIVE YEAR AVERAGE

| Variety | Lint data | | | Value lint and seed |
|---|---|---|---|---|
| | Yield | Per-cent | Length | |
| Delfos 631 | 400.3 | | 1 3/16 | 113.26 |
| Delfos 6102 | 435.4 | 33.4 | 1 1/16 | 113.03 |
| D. & P. L. No. 4 | 498.2 | 37.1 | 1 | 112.74 |
| Lone Star 65 | 453.1 | 35.6 | 1 1/16 | 106.72 |
| Express, Light. | 387.1 | 33.0 | 1 1/8 | 106.12 |
| Acala No. 5 | 435.2 | 37.9 | 1 | 104.18 |
| Willis | 452.5 | 34.2 | 7/8 f | 104.06 |
| Miss. Sta. Trice | 428.3 | 33.5 | 1 | 102.79 |
| Half & Half, Mahon | 478.6 | 42.4 | 13/16 | 101.21 |
| Miller | 398.3 | 34.9 | 1 | 96.45 |
| Deltatype Webber | 323.1 | 31.2 | 1 3/16 | 95.90 |
| Cleve. 54 | 411.5 | 35.9 | 7/8 f | 93.64 |
| Cleve. Piedmont | 388.3 | 35.2 | 7/8 | 87.45 |
| Cleve. Wann. | 401.9 | 37.4 | 7/8 | 86.04 |

The five year average given in Tables 3 and 4 should assist in making selections of varieties for this section. It will be seen that Delfos 6102 and 631 rank first and second on both hill and valley land. If a staple cotton is desired either of these varieties is good. Lone Star 65 comes third in money value on valley land and D. & P. L. No. 4 third on hill land. Lone Star 65 ranks fourth on hill land. Lone Star 65 is especially good on upland. It is a good, strong cotton, dwarf, big boll, early maturing, a good storm cotton and easy to pick. This variety was first in money value the wettest year on record, 1923, and second the dryest year on record, 1925. There are several new varieties of cotton that are very promising which can be seen from this year's variety test. Some of these varieties have given promise for two or three years.

It appears that staple cotton can be grown on both valley and

hill land if the soil is good and properly fertilized. However, as a rule, it is better to grow shorter staple varieties of cotton in the hill section on the thinner land and longer staple varieties on valley or more fertile soils. The length of staple is governed by the fertility of the soil; the more fertile the soil, the longer staple any variety will grow.

## COTTON SPACING TEST

The soil for the hill test was brown loam table land and for the valley test, fertile brown loam land. The plots on the hill land test were four rows each, duplicated, rows, 345x3½ feet. On valley land the plots were three rows each, duplicated, rows 196x3½ feet. Lone Star 65 cotton was used and was planted April 26 and 27.

An attempt was made to make the following spacing: Cotton as the planter left it, or unthinned, three stalks per foot, two stalks per foot, one stalk per foot, one stalk per 18 inches and one stalk per 24 inches.

Tables 5 and 6 give the actual space obtained.

TABLE 5—HILL SPACING TEST

| Plants per foot | Yield of seed cotton pounds |
|---|---|
| 4.02 | 1029.6 |
| 2.43 | 1020.6 |
| 1.75 | 915.5 |
| 1.20 | 904.7 |
| .70 | 823.5 |
| .63 | 764.0 |

TABLE 6—VALLEY SPACING TEST

| Plants per foot | Yield of seed cotton pounds |
|---|---|
| 5.03 | 1588.7 |
| 2.44 | 1781.3 |
| 1.70 | 1686.8 |
| .89 | 1676.5 |
| .66 | 1548.8 |
| .57 | 1648.5 |

This season was unfavorable for the best development of cotton. About sixty-five per cent of a normal crop was made, due to too much rain in the spring and summer. The cotton hopper and boll weevil both did considerable damage. There is not the marked difference in spacing in either hill or the valley test that has been found in the past. On the hill land, the unthinned plots averaging 4 stalks per foot gave a little the best yield. And on the valley land 2.44 stalks per foot gave a little the best yeild. From these results our recommendations in the past have been about right. They are as follows: For hill land from 3 to 4 stalks per foot and for valley land from 2 to 3 stalks per foot.

## COOPERATIVE FERTILIZER TEST

This work was conducted by the Holly Springs Branch Station in cooperation with county agents, agricultural high schools and farmers. Summer plantings were made on the station on both valley and

hill lands. The tests were made at New Albany on the farm of Mr. Dan Robins with the assistance of County Agent, W. C. Mims. The tests were made in Grenada County on the farm of Mr. O. D. Phillips, near Torrance, with the assistance of County Agent, Pollard. The plots at Ashland were on the school grounds and were conducted with the assistance of E. E. Deen, principal of the High School.

The valley test at the station was on improved valley land. Some wilt developed in this planting. The hill land test was on unimproved land, slightly rolling. The test at New Albany was on thin sandy loam, fairly level, and typical of the Pontotoc Ridge Section. The plots at Ashland were on slightly rolling table land, sandy loam of ordinary fertility. The plots near Torrance, Grenada County, were on level land, thin brown loam, heavily infested with wilt. Lone Star 65 was the variety used at New Albany and Torrance, and the hill test on the station. Mississippi Station Trice was used at Ashland and on the valley land test on the station.

Materials applied to the last three plots of all the tests, except at Ashland, supply as much plant food to the acre as would be supplied by 1,200, 1,800, and 2,400 pounds, respectively, of an 8-4-4 mixed fertilizer. All other treatments are based on 600 pounds of mixed fertilizer of the analysis indicated.

In all fertilizer work reported in this bulletin the increase was obtained according to the standard adopted by the American Society of Agronomy as reported in Vol. 16 No. 1 of the Journal . The column marked "check yield" was obtained according to the above method by assuming that there is a gradual increase or decrease in fertility from one check to the other. All plots were 1-20 acre in size, composed of four rows and in three series. Only the middle rows were used in computing yields.

TABLE 7—FERTILIZER TEST, VALLEY LAND—HOLLY SPRINGS

| Pounds of material applied per acre | | | | Pounds of seed cotton per acre | | | Dollars per acre | | |
|---|---|---|---|---|---|---|---|---|---|
| Super-phos. | Nitrate of soda | Mur. of potash | Analysis | Plot yield | Check yield | Increase | Value of increase at 7c | Cost of fert. | Net gain |
| No fertilizer | | | | 873.1 | 873.1 | —— | —— | —— | —— |
| 300 | 160 | 100 | 8-4-8 | 1238.4 | 866.4 | 372.0 | 26.04 | 9.33 | 16.71 |
| 300 | 160 | 75 | 8-4-6 | 1125.1 | 859.7 | 265.4 | 18.58 | 8.73 | 9.85 |
| 300 | 160 | 50 | 8-4-4 | 1097.1 | 853.0 | 244.1 | 17.09 | 8.13 | 8.96 |
| No fertilizer | | | | 846.5 | 846.5 | —— | —— | —— | —— |
| 300 | 160 | 25 | 8-4-2 | 1158.4 | 839.5 | 318.9 | 22.32 | 7.53 | 14.79 |
| 300 | 160 | | 8-4-0 | 1101.1 | 832.5 | 268.6 | 18.80 | 6.93 | 11.87 |
| 300 | 320 | 50 | 8-8-4 | 1075.7 | 825.5 | 250.2 | 17.51 | 12.81 | 4.70 |
| No fertilizer | | | | 818.5 | 818.5 | —— | —— | —— | —— |
| 300 | 240 | 50 | 8-6-4 | 1202.4 | 820.6 | 381.6 | 26.71 | 10.47 | 16.24 |
| 225 | 160 | 50 | 6-4-4 | 1107.7 | 823.1 | 284.6 | 19.92 | 7.57 | 12.35 |
| 150 | 160 | 50 | 4-4-4 | 1099.7 | 825.4 | 274.3 | 19.20 | 7.00 | 12.20 |
| No fertilizer | | | | 827.8 | 827.8 | —— | —— | —— | —— |
| 600 | 320 | 100 | 8-4-4 | 1242.4 | 809.5 | 432.9 | 30.30 | 16.26 | 14.04 |
| 900 | 480 | 150 | 8-4-4 | 958.4 | 791.2 | 167.2 | 11.70 | 24.39 | -12.69 |
| 1200 | 640 | 200 | 8-4-4 | 871.8 | 772.9 | 98.9 | 6.92 | 32.52 | -25.60 |
| No fertilizer | | | | 754.8 | 754.8 | —— | —— | —— | —— |

## TABLE 8—FERTILIZER TEST, HILL LAND—HOLLY SPRINGS

| Pounds of material applied per acre | | | | Pounds of seed cotton per acre | | | Dollars per acre | | |
|---|---|---|---|---|---|---|---|---|---|
| Super. phos. | Nitrate of soda | Mur. of potash | Analysis | Plot yield | Check yield | Increase | Value of increase at 7c. | Cost of fert. | Net gain |
| No fertilizer | | | | 568.4 | 568.4 | —— | —— | —— | —— |
| 300 | 160 | 100 | 8-4-8 | 1280.4 | 589.2 | 691.2 | 48.38 | 9.33 | 39.05 |
| 300 | 160 | 75 | 8-4-6 | 1282.5 | 610.0 | 672.5 | 47.08 | 8.73 | 38.35 |
| 300 | 160 | 50 | 8-4-4 | 1378.3 | 630.8 | 747.5 | 52.33 | 8.13 | 44.20 |
| No fertilizer | | | | 651.7 | 651.7 | —— | —— | —— | —— |
| 300 | 160 | 25 | 8-4-2 | 1226.3 | 711.6 | 514.7 | 36.03 | 7.53 | 28.50 |
| 300 | 160 | — | 8-4-0 | 1384.5 | 771.5 | 613.0 | 42.91 | 6.93 | 35.98 |
| 300 | 320 | 50 | 8-8-4 | 1532.4 | 831.4 | 701.0 | 49.07 | 12.81 | 36.26 |
| No fertilizer | | | | 891.1 | 891.1 | —— | —— | —— | —— |
| 300 | 240 | 50 | 8-6-4 | 1474.1 | 829.2 | 644.9 | 45.14 | 10.47 | 34.67 |
| 225 | 160 | 50 | 6-4-4 | 1417.8 | 767.3 | 650.5 | 45.54 | 7.57 | 37.97 |
| 150 | 160 | 50 | 4-4-4 | 1186.7 | 705.4 | 481.3 | 33.69 | 7.00 | 26.69 |
| No fertilizer | | | | 643.3 | 643.3 | —— | —— | —— | —— |
| 600 | 320 | 100 | 8-4-4 | 1557.3 | 633.4 | 923.9 | 64.67 | 16.26 | 48.41 |
| 900 | 480 | 150 | 8-4-4 | 1661.4 | 623.5 | 1037.9 | 72.65 | 24.39 | 48.26 |
| 1200 | 640 | 200 | 8-4-4 | 1648.9 | 613.6 | 1035.3 | 72.47 | 32.52 | 39.95 |
| No fertilizer | | | | 603.8 | 603.8 | —— | —— | —— | —— |

## TABLE 9—COOPERATIVE FERTILIZER TEST—GRENADA CO

| Pounds of material applied per acre | | | | Pounds of seed cotton per acre | | | Dollars per acre | | |
|---|---|---|---|---|---|---|---|---|---|
| Super-phos. | Nitrate of soda | Mur. of potash | Analysis | Plot yield | Check yield | Increase | Value of increase at 7c | Cost of fert. | Net gain |
| No fertilizer | | | | 594.5 | 594.5 | —— | —— | —— | —— |
| 300 | 160 | 100 | 8-4-8 | 1154.4 | 549.8 | 604.6 | 42.32 | 9.33 | 32.99 |
| 300 | 160 | 75 | 8-4-6 | 1025.1 | 505.1 | 520.0 | 36.40 | 8.73 | 27.67 |
| 300 | 160 | 50 | 8-4-4 | 901.1 | 460.4 | 440.7 | 30.85 | 8.13 | 22.72 |
| No fertilizer | | | | 415.9 | 415.9 | —— | —— | —— | —— |
| 300 | 160 | 25 | 8-4-2 | 745.1 | 428.2 | 316.9 | 22.18 | 7.53 | 14.65 |
| 300 | 160 | — | 8-4-0 | 798.5 | 440.5 | 358.0 | 25.06 | 6.93 | 18.13 |
| 300 | 320 | 50 | 8-8-4 | 825.1 | 452,8 | 372.3 | 26.06 | 12.81 | 13.25 |
| No fertilizer | | | | 465.2 | 465.2 | —— | —— | —— | —— |
| 300 | 240 | 50 | 8-6-4 | 927.8 | 446.9 | 480.9 | 33.66 | 10.47 | 23.19 |
| 225 | 160 | 50 | 6-4-4 | 850.5 | 428.6 | 421.9 | 29.53 | 7.57 | 21.96 |
| 150 | 160 | 50 | 4-4-4 | 802.5 | 410.3 | 392.2 | 27.45 | 7.00 | 20.45 |
| No fertilizer | | | | 391.9 | 391.9 | —— | —— | —— | —— |
| 600 | 320 | 100 | 8-4-4 | 783.8 | 458.4 | 325.4 | 22.78 | 16.26 | 6.52 |
| 900 | 480 | 150 | 8-4-4 | 983.8 | 525.1 | 458.7 | 32.11 | 24.39 | 7.72 |
| 1200 | 640 | 200 | 8-4-4 | 1254.4 | 591.8 | 662.6 | 46.38 | 32.52 | 13.86 |
| No fertilizer | | | | 658.5 | 658.5 | —— | —— | —— | —— |

TABLE 10—COOPERATIVE FERTILIZER TEST—NEW ALBANY

| Pounds of material applied per acre | | | | Pounds of seed cotton per acre | | | Dollars per acre | | |
|---|---|---|---|---|---|---|---|---|---|
| Super-phos. | Nitrate of soda | Mur. of potash | Analysis | Plot yield | Check yield | Increase | Value of increase at 7c. | Cost of fert. | Net gain |
| No fertilizer | | | | 322.7 | 322.7 | —— | —— | —— | —— |
| 300 | 160 | 100 | 8-4-8 | 962.6 | 315.2 | 647.4 | 45.32 | 9.33 | 35.99 |
| 300 | 160 | 75 | 8-4-6 | 836.2 | 307.7 | 528.5 | 37.00 | 8.73 | 28.27 |
| 300 | 160 | 50 | 8-4-4 | 816.2 | 300.2 | 516.0 | 36.12 | 8.13 | 27.99 |
| No fertilizer | | | | 292.8 | 292.8 | —— | —— | —— | —— |
| 300 | 160 | 25 | 8-4-2 | 662.1 | 287.6 | 374.5 | 26.22 | 7.53 | 18.69 |
| 300 | 160 | — | 8-4-0 | 664.3 | 282.3 | 382.0 | 26.74 | 6.93 | 19.81 |
| 300 | 320 | 50 | 8-8-4 | 937.1 | 227.0 | 660.1 | 46.21 | 12.81 | 33.40 |
| No fertilizer | | | | 271.7 | 271.7 | —— | —— | —— | —— |
| 300 | 240 | 50 | 8-6-4 | 821.8 | 242.9 | 578.9 | 40.52 | 10.47 | 30.05 |
| 225 | 160 | 50 | 6-4-4 | 535.6 | 214.1 | 321.5 | 22.51 | 7.54 | 14.97 |
| 150 | 160 | 50 | 4-4-4 | 545.6 | 185.3 | 360.3 | 25.22 | 7.00 | 18.22 |
| No fertilizer | | | | 156.4 | 156.4 | —— | —— | —— | —— |
| 600 | 320 | 100 | 8-4-4 | 735.3 | 158.3 | 577.0 | 40.39 | 16.26 | 24.13 |
| 900 | 480 | 150 | 8-4-4 | 848.4 | 160.2 | 688.2 | 48.17 | 24.39 | 23.78 |
| 1200 | 640 | 200 | 8-4-4 | 931.6 | 162.1 | 769.5 | 53.87 | 32.52 | 21.35 |
| No fertilizer | | | | 164.1 | 164.1 | —— | —— | —— | —— |

TABLE 11—COOPERATIVE FERTILIZER TEST—ASHLAND

| Pounds of material applied per acre | | | | Pounds of seed cotton per acre | | | Dollars per acre | | |
|---|---|---|---|---|---|---|---|---|---|
| Super-phos. | Nitrate of soda | Mur. of potash | Analysis | Plot yield | Check yield | Increase | Value of increse at 7c. | Cost of fert. | Net gain |
| No fertilizer | | | | 588.5 | 588.5 | —— | —— | —— | —— |
| 300 | 160 | 100 | 8-4-8 | 913.5 | 532.2 | 381.3 | 26.69 | 9.33 | 17.36 |
| 300 | 160 | 75 | 8-4-6 | 908.5 | 475.9 | 432.6 | 30.28 | 8.73 | 21.55 |
| 300 | 160 | 50 | 8-4-4 | 955.2 | 419.6 | 535.6 | 37.49 | 8.13 | 29.36 |
| No fertilizer | | | | 363.4 | 363.4 | —— | —— | —— | —— |
| 300 | 160 | 25 | 8-4-2 | 625.1 | 350.1 | 275.0 | 19.25 | 7.53 | 11.72 |
| 300 | 160 | — | 8-4-0 | 575.1 | 336.8 | 238.3 | 16.68 | 6.93 | 9.75 |
| 300 | 320 | 50 | 8-8-4 | 721.8 | 323.5 | 398.3 | 27.88 | 12.81 | 15.07 |
| No fertilizer | | | | 310.1 | 310.1 | —— | —— | —— | —— |
| 300 | 240 | 50 | 8-6-4 | 623.5 | 331.8 | 291.7 | 20.42 | 10.47 | 9.95 |
| 225 | 160 | 50 | 6-4-4 | 566.8 | 353.5 | 213.3 | 14.93 | 7.57 | 7.36 |
| 150 | 160 | 50 | 4-4-4 | 766.8 | 375.2 | 391.6 | 27.41 | 7.00 | 20.41 |
| No fertilizer | | | | 396.7 | 396.7 | —— | —— | —— | —— |

In the several cooperative fertilizer tests given in the foregoing tables the following data is found:

The station valley test, which was planted the third time May 28, was the first field to become heavily infested with boll weevils. The yields of these plots were far below normal for the soil. On the plots where 600 pounds of 8-6-4 and 600 pounds of 8-4-8 were used the profits were a little above $16.00 per acre. (See Table 7). The heavy application was used at a considerable loss.

In Table 8, the station hill land test, planted April 28, 1,200 pounds of an 8-4-4 mixture gave $48.41 profit above the cost of fertil-

izer and 600 pounds of an 8-4-4 mixture gave a net gain of $44.20. This mixture appears to give the best results.

In Table 9, the Grenada County test, only the 600 pound applications were profitable. Where an 8-4-8 mixture was used the net gains were $32.99 per acre, 8-4-6 net gain $27.67 and 8-4-4 net gain $22.72 per acre. This land proved to be heavily infested with red rust. The indications are that on such lands fertilizers high in potash are advisable. These high potash plots were outstanding throughout the season.

In the New Albany test, Table 10, plots highest in potash content gave the best results and the yield decreased as the amount of potash was decreased. It also appears that the 600 pound application gave the best results.

In the plots at Ashland, Table 11, 600 pounds of an 8-4-4 mixture gave decidedly the best results.

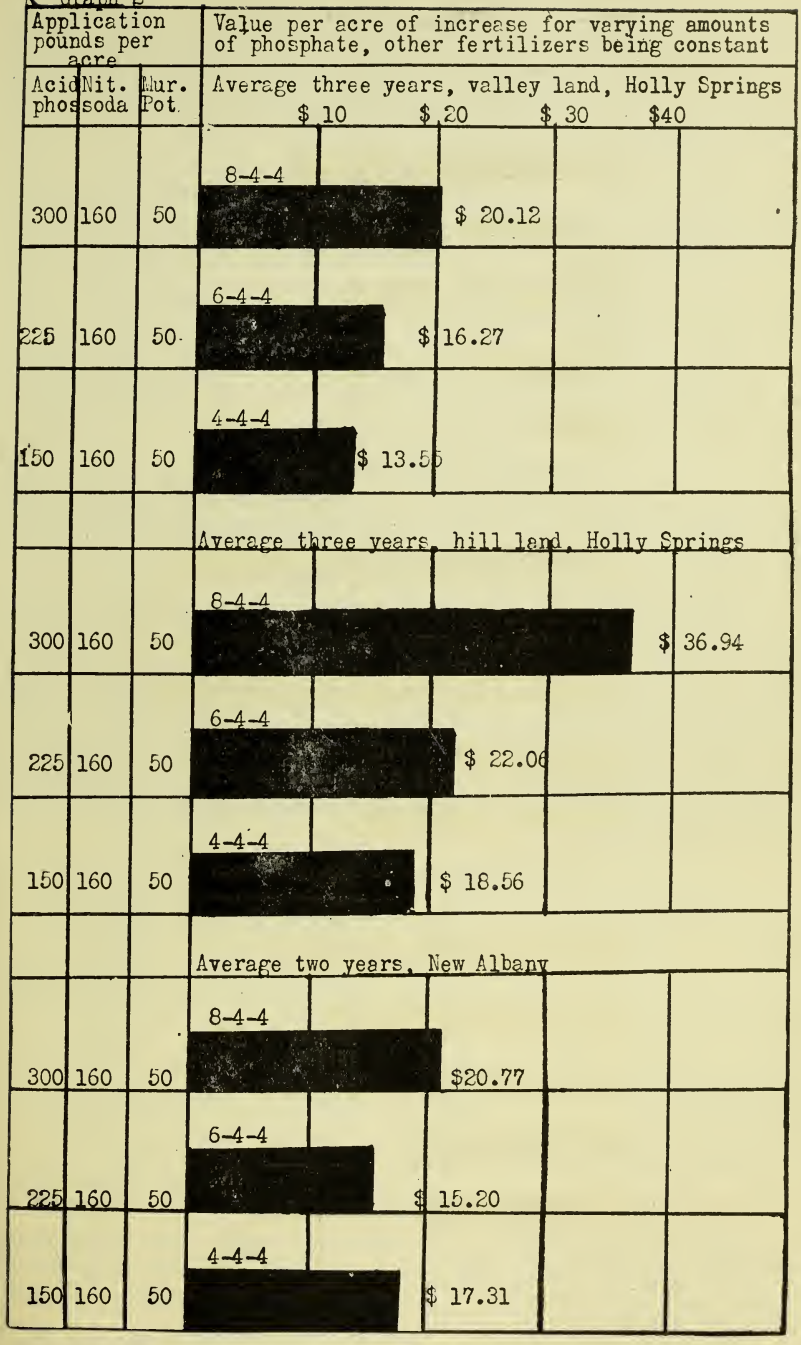
There is no marked difference in the fertilizer requirements in the several sections in which these results were obtained. It appears that phosphorus, nitrogen and potash in combination give the best results. It seems, in a majority of cases, that 600 pounds of fertilizer was the most economical quantity to use this year. Taking into consideration our past results at the station and at various points in North Mississippi, we find no marked difference in the soil requirements in this part of the state, except on land heavily infested with cotton red rust. The outstanding fact is that a complete fertilizer will increase the yield of cotton very materially, frequently doubling the yield per acre, as can be seen in the data given.

Graph 1

Application pounds per acre — Net value per acre of increase for varying amts. of potash, other fertilizers being constant.

| Acid phos. | Nit. Soda | Mur. Pot. | Average three years, valley land, Holly Springs |
|---|---|---|---|
| | | | $10 $20 $30 $40 |
| 300 | 160 | 100 | 8-4-8 $24.50 |
| 300 | 160 | 75 | 8-4-6 $ 17.35 |
| 300 | 160 | 50 | 8-4-4 $ 20.12 |
| 300 | 160 | 25 | 8-4-2 $ 11.47 |
| 300 | 160 | 0 | 8-4-0 $ 5.20 |
| | | | Average three years, Hill land, Holly Springs |
| 300 | 160 | 100 | 8-4-8 $ 34.15 |
| 300 | 160 | 75 | 8-4-6 $ 37.55 |
| 300 | 160 | 50 | 8-4-4 $ 36.94 |
| 300 | 160 | 25 | 8-4-2 $ 23.00 |
| 300 | 160 | 0 | 8-4-0 $ 19.90 |
| | | | Average two years, New Albany |
| 300 | 160 | 100 | 8-4-8 $ 26.09 |
| 300 | 160 | 75 | 8-4-6 $ 21.87 |
| 300 | 160 | 50 | 8-4-4 $ 20.77 |
| 300 | 160 | 25 | 8-4-2 $ 15.63 |
| 300 | 160 | 0 | 8-4-0 $ 14.98 |

Graph 2


Application pounds per acre
Acid phos
Nit. soda
Mur. Pot
Value per acre of increase for varying amounts of phosphate, other fertilizers being constant
Average three years, valley land, Holly Springs
$ 10
$ 20
$ 30
$40
300 160 50
8-4-4
$ 20.12
225 160 50
6-4-4
$ 16.27
150 160 50
4-4-4
$ 13.55
Average three years, hill land, Holly Springs
300 160 50
8-4-4
$ 36.94
225 160 50
6-4-4
$ 22.06
150 160 50
4-4-4
$ 18.56
Average two years, New Albany
300 160 50
8-4-4
$20.77
225 160 50
6-4-4
$ 15.20
150 160 50
4-4-4
$ 17.31

**Recommendations**—The cotton farmers in this section should use a mixture of 200 pounds acid phosphate, 100 pounds of nitrate of soda and 25 pounds of muriate or sulphate of potash, or 100 pounds kainit. This mixture should be applied at the rate of from 400 to 600 pounds per acre. An 8-4-4 ready mixed fertilizer can be used instead of the home mixture, provided most of the nitrogen is from a readily soluble source.

From previous years reslts, it appears that as much as 1,000 pounds of a well balanced fertilizer will pay most years. Results also indicate that when the soil has been materially improved by the use of legumes and other practices, excellent yields can be obtained without an enormous investment in expensive fertilizers. When soils are very deficient in vegetable matter an 8-6-4 fertilizer instead of an 8-4-4 could be used to advantage. On land where rust effects the plants, an 8-4-6 or even an 8-4-8 fertilizer is advisable. Any form of potash may be used in making the mixture. Our practice is to apply all the fertilizer to be used on the land before planting.

## POTASH SOURCES TEST

The soil used in this test is unimproved sandy loam, the same soil that was used in 1926. Each plot was fertilized the same as the year before. All plots were in triplicate.

Mississippi Station Trice was planted May 18.

Each potash carrier given in the table below was applied at such a rate as to supply 24 pounds of available potash per acre. All plots, including checks, received in addition to the potash, 300 pounds of superphosphate (acid phosphate) and 150 pounds of nitrate of soda per acre in order that deficiencies in these materials would not render the potash comparisons worthless. The column marked "check yield" was obtained by assuming that there is a gradual increase or decrease in fertility from one check to another, as is adopted by the American Society of Agronomy.

TABLE 12—POTASH SOURCES TEST—1927

| Material applied | Pounds per acre | Pounds of seed cotton per acre | | | Percent of increase | Rank |
|---|---|---|---|---|---|---|
| | | Plot yield | Check yield | Increase | | |
| No potash | | 1067.7 | 1067.7 | —— | —— | |
| Muriate of potash | 50.0 | 1242.4 | 1041.5 | 200.9 | 19.29 | 2 |
| Trona | 41.7 | 1234.4 | 1015.3 | 219.1 | 21.58 | 1 |
| No potash | | 989.1 | 989.1 | —— | —— | |
| Sulphate of potash | 50.0 | 1098.4 | 1000.6 | 97.8 | 9.77 | 3 |
| Kainit | 200.0 | 1087.7 | 1012.1 | 75.6 | 7.47 | 4 |
| No potash | | 1023.7 | 1023.7 | —— | —— | |

## NITROGEN SOURCES TEST

This test was conducted on unimproved sandy loam valley land. The plots were 1-20 acre each and on the same soil that was used in 1926. Each plot was fertilized the same as the year before. All plots were in triplicate.

Mississippi Station Trice was the variety used. Planting was

made May 18. Each nitrogen carrier given in the table below was applied at such a rate as to supply 30 pounds of available nitrogen per acre. The column marked "check yield" was obtained by assuming that there was a gradual increase or decrease in fertility from one check to another, as is adopted by the American Society of Agronomy.

TABLE 13—NITROGEN SOURCES TEST

| Pounds of material applied per acre | Pounds of seed cotton per acre | | | | |
|---|---|---|---|---|---|
| | Plot yield | Check yield | Increase | Percent increase | Rank |
| No nitrogen | 361.2 | 361.2 | —— | —— | |
| 200 Nitrate of soda | 775.8 | 383.2 | 392.6 | 102.4 | 3 |
| 150 Ammonium sulphate | 806.5 | 405.2 | 401.3 | 99.0 | 4 |
| 115.5 Leunasalpeter | 878.4 | 427.2 | 451.2 | 105.6 | 2 |
| No nitrogen | 449.2 | 449.2 | —— | —— | |
| 138.9 Calcium cyanamid | 889.1 | 484.5 | 404.6 | 83.5 | 6 |
| 200 Lime nitrate | 1023.7 | 519.8 | 503.9 | 96.9 | 5 |
| 65.2 Urea | 1189.0 | 555.1 | 633.9 | 114.2 | 1 |
| No nitrogen | 590.5 | 590.5 | —— | —— | |

**Note:** All plots, including checks, received in addition to the nitrogen 400 pounds of super-phosphate (acid phosphate) and 67¾ pounds of muriate of potash per acre in order that deficiencies in these materials would not render the nitrogen comparisons worthless.

## MIXED FERTILIZER TEST

TABLE 14—MIXED FERTILIZER TEST—1927

| Pounds of material applied per cre | Yield seed cotton per acre |
|---|---|
| 300 Super-phos. (Acid phos.)<br>160 Nitro-po | 1019.7 |
| 300 Super-phos. (Acid phos.)<br>160 Nitrate of soda<br>31.2 80% Muriate | 1027.8 |
| 32-16-16<br>127.5 32-16-16 | 889.5 |
| 300 Super-phos. (Acid phos.)<br>160 Nitrate of soda<br>50 Muriate of potash | 908.5 |

The soil used in this test was slightly rolling table land, slightly uneven in fertility. All plots were triplicated. Lone Star 65 was the variety used and a second planting was made to secure a stand. This is the first year's results of this test and an unfavorable year for cotton.

## SEED TREATMENT TESTS FOR SEED-BORNE DISEASE OF COTTON AND CORN

Tests were made in cooperation with the Department of Plant Pathology of the Experiment Station and the State Plant Board, the plan being furnished by Dr. D. C. Neal, Plant Pathologist, and Mr. H. H. Wedgworth, Associate Plant Pathologist, A. and M. College, Mississippi. These simple experiments were planned to determine the value of some of the organic mercury disinfectants for the control of corn root, stalk, and ear rots, also seed-borne diseases of cotton. Promising results have been obtained from the use of some of these compounds in the Corn Belt. The Du Pont Company and Bayer Chemical Company are putting on active sale campaigns of organic mercuries in this territory which makes it desirable to obtain some information on the value of these disinfectants for the control of certain seed-borne diseases under Mississippi conditions.

**Corn Seed**—Two series of plots were used in this test with corn. Each plot was composed of four rows each.

TABLE 15—CORN SEED TREATMENT

| Treatment | Average yield per acre bushels |
|---|---|
| Not treated | 43.1 |
| Semesan | 60.6 |
| Bayer dust | 64.0 |
| Stimuline | 63.3 |

**Cotton Seed**—Several organic mercury disinfectants were used for treating cotton seed. This test was conducted on improved valley land which was moderately infested with wilt. The seed treated with the various disinfectants were planted in three series and the outstanding ones are presented in Table 16.

TABLE 16—COTTON SEED TREATMENT

| Treatment | Average yield per acre, pounds |
|---|---|
| Not treated | 1259.9 |
| Semesan | 1583.9 |
| Semesan, Jr. | 1534.5 |
| Special Bayer, 6x | 1508.2 |

The data presented in Tables 15 and 16 are the results of only one season's work and we do not believe any great significance should be given to these figures. They indicate, however, the possibility of such disinfectants for the control of certain seed-borne diseases of corn and cotton under North Mississippi conditions. This work will probably be enlarged and continued for a number of years until some basic conclusion is reached.

## CORN

The seasons were very unfavorable for corn in this section this year. At this station practically all corn is grown after vetch, or vetch and small grain, is harvested, except on lands used for experimental purposes.

As a rule early plantings of corn give the highest yields. When plantings are made earlier than the latter part of April in this latitude the results are often poor stands. On well drained fertile soils somewhat earlier plantings may be made. Our practice is to turn the land as soon as the cover crop is removed, disk and plant on level. If the seasons are dry a roller can be used to advantage after planting. One good rain to settle the soil almost insures a crop after a good stand is secured. Poor land is a poor place to plant corn, and on account of corn being a crop of low money value, only a small quantity of fertilizer can be used with profit. We have never been able to grow a profitable crop of corn on poor land, regardless of the methods used. Poor land could be planted to soybeans as a feed crop to better advantage than to corn.

Soybeans are planted in every row of corn grown on the station except in a few instances. Either of the following varieties can be used, according to the purpose for which they are grown: Laredo, Otootan, Mammoth Yellow and Biloxi. The last two named are fine for hogs. Soybeans will stand more water than corn. This being the case, unsafe wet lands can be planted to corn and soybeans, and if the corn is drowned out the beans will make a crop. One of the easiest ways to increase the fertility of a soil is to plant beans in every row of corn. Beans should be planted in every row of corn grown in the state. A dry year, the yield of corn will be reduced probably as much as 25% (See Corn and Bean Test, Table 18) but the two crops will more than equal corn grown alone. After the corn is harvested the beans may be hoed off or grazed with livestock. Our practice is to allow the beans to decay on the soil as a restorative crop. Where such a method is practiced, it only requires a few years to double the yield of corn grown on land. We have not found a cheaper method of soil building. It only requires about six pounds of Laredo beans to plant an acre with corn. In the absence of a combination corn and bean planter, a corn planter can be used to plant the beans on the same row planted to corn. A good method is to leave two hills of beans to one of corn. An average season the beans will almost cover the entire middles of the rows by harvest time. This should add from ten to twenty dollars worth of nitrogen to the soil and almost an equal amount in value of organic matter.

**Planting**—Corn should be planted very shallow on well prepared seed beds. There are but few crops that will make greater response to well prepared soils. Good preparation is half cultivation with corn. We prefer wasting seed corn in order to insure a good stand. On average land where a forty-two inch row is used, one stalk every thirty inches is a fair distance. As the land increases or decreases in fertility, the distance should vary. The more fertile the soil the more closely the corn can be grown; and the thinner the soil, the wider the distance.

should be. No land should be planted to corn that does not produce more than 20 bushels per acre. It requires about 20 bushels per acre to pay the cost of cultivation, when rents and labor are considered.

**Cultivation**—When deep cultivation is practiced it should begin when the plants are small and should be kept up at frequent intervals. This method is more applicable for early plantings. For June planting, medium shallow cultivation is advisable. Four or five cultivations on late plantings are usually sufficient for good results. The cultivator should be run about the same depth at each cultivation, regardless of method used.

## CORN VARIETY TEST

Plots, one row each, planted in checks and repeated seven times were planted June 10. The rows were three and one-half feet apart and 130 feet long. Two hundred pounds of a super-phosphate (acid phosphate) and 150 pounds of nitrate of soda was used.

TABLE 17—CORN VARIETY TEST

| Variety | Yield in bushels per acre | Rank |
|---|---|---|
| Mosby, Station | 54.0 | 5 |
| Mosby, Delta | 50.5 | 8 |
| Mosby, D. & P. L. | 53.7 | 6 |
| Mosby, Lee | 52.7 | 7 |
| Mosby, Suttle | 42.6 | 14 |
| Cocke's Prolific, Station | 54.6 | 4 |
| Cocke's Prolific, Delta | 46.6 | 13 |
| Anderson's Choice | 61.9 | 1 |
| Hastings | 58.1 | 3 |
| Johnson's Prolific | 49.0 | 10 |
| Delta Prolific | 48.6 | 11 |
| Mexican June | 40.3 | 15 |
| Leguna | 46.7 | 12 |
| Paymaster, Neal | 50.3 | 9 |
| Paymaster, Fischer | 59.8 | 2 |
| Yellow Dent, Ferguson | 33.3 | 18 |
| Yellow Dent, Station | 38.2 | 17 |
| Large Golden Dent | 39.9 | 16 |

The soil on which this test was conducted was highly improved but the seasons were unfavorable and the yields are much below a normal yield. Taking into account the corn variety test for the past six years, not including this year's test, the average yields were as follows: Neal's Paymaster 66.82 bushels; Hasting's Prolific, 65.16; Mosby, Station, 57.76; Cocke's Prolific, 58.67. Any of the above varieties are good. There are objections found by some farmers with Neal's Paymaster. The cobs are large and some seasons the tip ends of the ears are a little damaged. Mosby is one of the best all round varieties. As can be seen from the variety test, Anderson's Choice led the list this year. This is the first time we have introduced this variety into the test and it gives promise.

**Fertilizer Recommendations**—From past results a mixture of 150

to 200 pounds of super-phosphate (acid phosphate) and 100 pounds of nitrate of soda, or the same quantity of nitrogen in other readily soluable forms should be used. In our 1926 results, double the quantity of the above mixture gave the best results. Usually an application of 100 pounds of nitrate of soda gives an increase of 8 to 10 bushels of corn per acre. There is no question but that super-phosphate (acid phosphate) is necessary unless heavy applications were used on the soil in growing other crops so that the residual effect will be had. Side dressings of nitrate of soda are frequently very beneficial if they are not made too late. However, this is usually the case. The second application should be made when corn is about knee high, or a little later.

The following is the method used for growing corn on this station: Plant the corn on good land; use 300 pounds super-phosphate (acid phosphate) mixed with 200 pounds of nitrate of soda; apply under the seed; secure a good stand and cultivate shallow after each rain. Soybeans are planted with the corn. The average is rarely less than fifty bushels per acre, with an oat and vetch crop harvested from the land before the corn is planted.

**Corn and Bean Test**—This test was planted June 6 on valley land. Three hundred pounds of super-phosphate (acid phosphate) and 200 pounds of nitrate of soda were applied per acre.

TABLE 18—CORN AND BEAN TEST—1927

| | 1923 | 1925 | 1926 | 1927 | Average |
|---|---|---|---|---|---|
| 6 rows corn | 48.2 | 45.7 | 57.9 | 46.1 | 49.5 |
| 6 rows corn with soybeans | 45.5 | 37.3 | 51.5 | 43.4 | 44.4 |
| 6 rows corn with velvet beans | 31.3 | 31.9 | 38.5 | 33.0 | 33.7 |
| 6 rows—two rows corn one row soybeans | 42.5 | 37.5 | 43.1 | 28.0 | 37.8 |
| 6 rows—two rows corn one row velvet beans | 40.2 | 34.2 | 46.6 | 24.3 | 36.3 |

Soybeans should be planted in corn, either in every row or in every third row. The two crops will more than equal corn alone. It is not advisable to plant velvet beans in every row of corn because in case of a wet year the corn will be greatly damaged by the beans. A good custom is to plant velvet beans in every third row of corn. During a wet season soybeans planted in every row of corn will damage the yield of corn but little. Therefore, it is recommended that soybeans be planted in every row.

## SILAGE

Sorghum produces at least one-third more tonnage per acre on any kind of land than corn and has very nearly the same feeding value, ton for ton. Japanese and Texas Seeded Cane are both most excellent varieties. We have used the Japanese Seeded Cane almost exclusively for silage. Sorghum will stand a drowth better and will not damage if harvesting is delayed. This is not the case with corn. Corn blooms but once and if the weather is unfavorable during this period the results

will be poor. There is one thing to be guarded in sorghum: It must be mature to make a good grade of silage. Immature silage will make sour silage and sour silage is very undesirable cattle feed. If sorghum is planted with a small size eight-hole corn plate in the planter, the seed will be dropped in bunches about twelve inches apart and, with proper cultivation, hoeing may not be necessary. Sorghum grown thick in this way will produce small stalks which are more desirable for feed. This season two and one-half acres of Japanese cane produced at the rate of 27.2 tons of silage per acre. This sorghum was planted after a cutting of vetch was harvested from the land.

Sorghum Silage

**Fertilizer Used**—Eight hundred pounds of an 8-4-4 fertilizer was applied in the drill before planting. On good land fifteen tons per acre would be a good average. Ten tons of corn silage is a good average crop. When such heavy tonnage is removed from land a liberal amount of fertilizer should be used. The 27.2 tons of sorghum took out more fertility than the fertilizer used put into the soil. If a mixed silage of corn and sorghum is desired, plant in different plots of land and haul to the cutter in alternate loads. We have not been able to find a more suitable and profitable substitute feed for dairy cows.

## SWEET POTATOES

The sweet potato is one crop that should be grown by every farmer and tenant on every farm in the South. It is adapted to almost any type of soil but probably does best on fertile sandy loam. An average crop per acre is about 200 bushels, while it is not at all uncommon to produce 350 bushels per acre. There is but little difference in food value between the sweet and Irish potato. The greatest drawback in sweet potato growing is disease. This can be controlled with proper care. Rotation of seed bed and fields used in growing potatoes and using clean seed will eliminate most of the trouble. The State Plant

Board is doing much good in fighting potato and other plant diseases that effect the economical wealth of the state.

Only clean, sound potatoes should be used for seed. Vine cuttings planted on land free from disease make desirable potatoes for growing plants. Sound potatoes taken from black rot infested potatoes can be used if soaked ten minutes in a solution composed of one ounce of bichloride of mercury to eight gallons of water. All potatoes should have this treatment, it matters not how clean they appear.

In making potato beds, convenience for watering should have much to do with the location. The beds should be on land where no potatoes have been grown within five years. If it becomes necessary to use the same beds each year, the soil should be removed and all parts of the bed disinfected with a solution of copper sulphate, one pound to twenty gallons of water. A wooden vessel should be used in making the solution.

The most satisfactory way to grow plants is in hot beds; it is the only safe way. The heat may be supplied from the use of stable manure, or artificially. When stable manure is used it is placed in a pit about 12 inches deep and about five feet wide and as long as desired. Horse manure is piled in these pits, about one wagon load to a pile. After two or three days this manure begins to heat; it is then spread out evenly over the pit and packed well and covered with about six inches of soil before the manure cools. In a few days this bed is ready to plant. No hot bed should be made until ready for use. This manure will furnish heat for about six weeks. The bed for best results should be covered either with hot bed sash or canvass to protect from cold rains. Bottom heat may be supplied from a furnace or some other method. A common method is to dig a trench about ten inches wide and twelve inches deep in the middle of the proposed bed. This trench should have a rise of not less than one foot every twenty-five feet of length. The lower end of the trench is widened out and deepened to be used as a furnace. Old tin or sheet iron is placed over the trench the entire length and six inches of soil put on the tin. The potatoes are bedded at the proper time. Clean sand or woods dirt is an excellent cover for potato beds. The potatoes are placed on the beds so as not to touch and are covered about two and one-half inches deep. A chimney is made of one by twelve plank, one inch thick and eight feet long. The advantage of artificial heat is that it can be supplied when necessary. Good potatoes can be grown on thin soil with a small application of a complete fertifizer.

**Fertilizer Tests**—The fertilizer tests with sweet potatoes the past year were not altogether satisfactory. Phosporus nor potash alone or in combination gave any appreciable results. Nitrogen was the limiting factor to some extent. Full results of the test will not be published. The seasons were good for the growing of sweet potatoes. The following table gives results of the test. All plots were in duplicate.

TABLE 19—SWEET POTATO FERTILIZER TEST—1927

| Pounds of material applied per acre | Pounds of potatoes per acre | Dollars per acre: Increase @ 2c per pound | Dollars per acre: Cost of fertilizer | Dollars per acre: Net gain |
|---|---|---|---|---|
| No fertilizer | 11930 | —— | —— | —— |
| 400 Super-phosphate<br>200 Kainit | 12090 | 6.00 | 4.93 | 1.07 |
| 400 Super-phosphate<br>200 Nitrate of soda<br>200 Kainit | 13720 | 40.00 | 10.88 | 29.12 |
| No fertilizer | 11650 | —— | —— | —— |
| 400 Super-phosphate<br>500 Cottonseed meal | 13080 | 37.48 | 14.80 | 23.18 |
| 400 Super-phosphate<br>500 Cottonseed meal<br>200 Kainit | 13080 | 37.48 | 14.30 | 23.18 |
| 400 Super-phosphate<br>100 Nitrate of soda<br>200 Kainit | 13080 | 41.92 | 12.54 | 29.85 |
| No fertilizer | 10760 | —— | —— | —— |

**Fertilizer Recommendations**—Until more definite information can be secured, 400 to 800 pounds of an 8-4-4 fertilizer will be recommended.

**Spacing**—Plants fourteen inches apart in the drill and rows three to three and one-half feet are the most economical distances we have found. The yield per acre can be materially increased by planting seven inches apart in the row.

**Digging Potatoes**—Remove the vines with a hay rake, or a vine cutter may used. In case of a killing frost before digging, the vines should be removed within two or three days. Two furrows with a double horse plow does good work in the absence of a potato digger. The greatest care should be used to prevent bruising. The potatoes should be assorted in the field and placed in baskets or boxes. This will facilitate hauling and curing in the curing houses. It is through bruised or cut potatoes that ring rot, storage rot and other diseases are introduced. Such potatoes should be disposed of as soon as possible after digging or stored separately.

**Curing Potatoes**—Get rid of excessive water in the potatoes soon after digging. If the weather is dry they will dry out rapidly in baskets if left in the field for a day or two. If stored in curing house and the weather is dry, open all ventilators, doors and windows and allow the air to circulate during the day, closing up at night. Keep fire going in furnace or stove during the day. It usually requires about two weeks to dry out a small house. The thermometer should range around eighty degrees during the day to secure the best results. Properly cured potatoes will stand four of five degrees below freezing without great damage. During extreme cold and wet weather a fire may be necessary. The proper temperature for keeping a house during winter is given at between forty-five and fifty-five degrees. If sweet potatoes are properly grown, and marketed when prices justify, the sweet potato

could easily be made one of North Mississippi's money crops. The demand is increasing in northern markets.

## VETCH

Circular 74 on Vetch, issued September, 1927, is available.

Every land owner should be interested in maintaining soil fertility. After controlling surface water by terracing, the next step should be the growing of legumes, either summer or winter. Vetch, crimson clover, bur clover, lespedeza, soybeans, velvet beans, and cowpeas are all good legumes. Take your choice but grow legumes of some kind to keep up soil fertility. More profitable crops are grown following legumes without any additional costs. Legumes can be fed to work stock and dairy cattle. The method of this station is to grow legumes as a catch crop. In most instances the cost is but little more than seeding. If the legume is vetch it is only necessary to seed once.

The hope of southern agriculture is increased production with less cost on less acreage.

Vetch is easily started on land and if properly handled (allowed to seed once in two or three years) it will remain indefinitely on the land and come up as a volunteer crop each fall after crop cultivation has

Oats and Vetch. 3½ Tons Per Acre

ended. Vetch makes its principal growth in March, April and May; but little growth is made in the fall. Hairy vetch has given the best results here, although smooth or common vetch does well and matures about ten days earlier than hairy vetch. In order to make a good start on a farm it should be planted on fertile soil. It does not do well on wet soils or in wet seasons. Land on which barnyard manure has been scattered gives fine results.

**Inoculation**—For inoculating seed, use the following method: For each pound of seed inoculated use one-half pound of soil from land growing vetch successfully. Mix one-half pound of common glue in one

gallon of hot water. At planting time, moisten the seed with the glue water and mix with the vetch soil. Cover as soon as planted to prevent the sunlight from destroying the inoculation germs.

Vetch planting time is from September 1 to November 1. About the middle of September is considered our best planting time. Many failures with vetch are made on account of late planting. It is safer to plant the latter part of August than November 1. The seasons that follow control the success of the plantings. Plant in the middles of any well cultivated crop and cover with a cultivator of some kind.

The first crop should be turned under at maturity, which is usually around the first of June. After the first year a hay crop can be removed when some of the seed have matured. This hay has very near the same feeding value as alfalfa. The usual crop is from one and one-halt to two tons per acre. After the hay is removed, turn the land and plant to corn or some other crop.

**Two Year Rotations**—The following practice has been successful at this station: Plant fifteen pounds of vetch seed per acre in cotton middles, after inoculating the seed, about the middle of September. Cover with a cultivator. When the ground is moist the seed will properly germinate. Harvesting the cotton will damage the seeding but little. Allow the plants to mature, which will be about June 1. Turn under the first crop and plant to corn or some other crop. The following spring turn the land and plant to cotton. The following September the volunteer vetch will come up in the cotton middles. Allow this vetch to mature some seed after which harvest for hay. After harvesting the hay, turn the land and plant to corn as before. This method has worked well for the past sixteen or eighteen years. Lime at the rate of two tons per acre will aid the growth of vetch very much. Small grains can be introduced in volunteer vetch if done before the plants germinate in the fall.

Cut 3 shows oats and vetch harvesed at the rate of 3½ tons. The land used in this rotation has produced two bales of cotton per acre and this year 27.2 tons of sorghum silage after vetch was harvested. The supply of phosphorus and potash is kept up on this land.

## LESPEDEZA

For three years in succession fertilizer and rate of seeding per acre experiments with lespedeza have not been conclusive. This plant adapts itself to the soil on which it is planted from the poorest to the richest, but like other plants, it does best on fertile soils. Lespedeza responds quickly, a normal season, to the use of phosphorus but is not benefitted by the use of lime, as is the case with most legumes. It appears to prefer sour to sweet soils. Many people have not fully realized what they have in this plant. Lespedeza is one of the greatest legumes ever grown in this country. It has been worth millions upon millions of dollars to the South in furnishing grazing, forage crops and restoring soils depleted of humus. Lespedeza should be planted on every idle acre of land in the South.

**Preparation of Soil**—But little preparation of seed bed is necessary. If the land is in rows it should be disked diagonally across the

rows and harrowed at right angles to the disking. Usually this is all that is necessary.

Small grain planting, either fall or spring plantings, furnish a good seed bed if the grain is harrowed with a section harrow just before the lespedeza seed are sown. After the grain is harvested the planting of lespedeza usually makes a good crop of hay by October. Seed are scattered by livestock and running water. A small quantity of seed can be sown on unbroken land as a result, within a year or two a perfect stand can be secured. It is not necessary to cover any planting by harrowing; it is better not to try to do so. If seeded upon freshly harrowed land the seed will not move during a rain, which will be the case on hard surface.

**Time and Rate of Seeding**—The time to seed lespedeza is from March 1 to the middle of April. There is some danger of frost killing the crop when planted too early on freshly broken and unprotected surface soils. The usual amount used for seeding an acre is one bushel (25 pounds.) Where as much as a bushel and one-half or even two bushels are used better results can be obtained. This is advisable when seed are cheap.

**Variety Test**—All plots for this test were in triplicate and planted on rolling table land of average fertility. The test was planted April 7 and harvested October 20.

TABLE 20—VARIETY TEST WITH LESPEDEZA

| Variety | Pounds of barn dry hay per acre |
|---|---|
| Kobe 04479 | 5015.4 |
| Common Lespedeza | 3595.0 |
| Korean 49027 | 2061.5 |

**Harvesting Seed**—The common method of harvesting seed is to attach a seed pan to a cutter bar of the mower. (These seed pans are on the market at about $12.50 each.) The seed pan catches the seed that shatters out as the hay passes over the top of the pan. The best results are usually obtained immediately following a frost in the fall and on land where the plants are small. Thin land usually furnishes more seed than fertile soil. This pan is used in hay harvesting as the best seed are secured in this way. Seven bushels of seed are about an average saving per acre. The seed sell from $2.00 to $6.00 per bushel, according to supply and demand.

For mid-summer grazing in pastures there are but few plants that could take the place of lespedeza. It should be in every pasture in the South as one of the main legumes. It grows nicely with other plants.

## SOYBEANS

The soybean should occupy first place as a forage crop for the hill section of the state. Laredo, Otootan, Biloxi and Mammoth Yellow are considered four of the best varieties and especially adapted to southern agriculture. Otootan and Biloxi are both late maturing varieties and should be planted early for best results. Either of the four-

varieties makes a most excellent quality of forage and grain combined. When grain for hogs is desired the Mammoth Yellow and Biloxi should be used. There are many varieties of soybeans on the market and all have their place for the various conditions over the United States. On account of the weather and other conditions this year, it was almost impossible to make an early planting of beans.

**Planting Time**—Any time from the middle of April until about the middle of July is a fit time for planting this crop. On this type of soil it is not advisable to attempt to grow soybeans broadcast. As a usual thing, our soils are too thin for the best results when using this method.

Eight or ten pounds of Laredo, Otootan or Virginia beans will seed an acre. About double this quantity of Mommoth Yellow and Biloxi is required as the seed are much larger.

Soybeans will grow on land too wet to grow good corn. Much of the wet land should be planted to corn and soybeans and if the corn is drowned out the soybeans will make a good crop. Most of the hay grown on the farm is soybeans planted after early spring crops.

Soybeans are planted in every row of corn not used for experimental purposes on the station farm, and on land after oats and vetch are harvested. The land is broken broadcast and disked and the bean seed drilled in rows about thirty inches apart. Two cultivations are usually sufficient to insure a good yield. Three or four hundred pounds of an 8-4-4 fertilizer per acre gives the soybeans a wonderful help in producing a good crop. An application of 200 pounds of acid phosphate and 100 pounds of kainit per acre will pay well. Soybeans respond wonderfully to the use of a small quantity of lime.

**Inoculation**—Inoculation is of greatest importance. Many plantings prove a failure for the lack of proper inoculation. Land on which a small quantity of stable manure has been broadcast gives good results when the seed are inoculated. Use about one-half pound of soil from a well inoculated field, to each pound of seed, using the glue method explained under vetch.

A variety test was planted June 29 and only a fair stand was secured. All plantings were in triplicate.

TABLE 21—VARIETY TEST WITH SOYBEANS

| Variety | Pounds of hay per acre |
|---|---|
| Laredo | 4691.6 |
| Virginia | 2895.1 |
| Otootan | 6678.1 |
| Mammoth Yellom | 3942.9 |
| Biloxi | 4286.5 |

The planting was too late to secure a yield of seed. Any of the above varieties could be expected to yeild from fifteen to thirty bushels per acre, according to conditions.

## SORGHUM AND SAGRAIN TEST

This test was planted on improved brown loam table land June 15. The plots were one row each and repeated twice.

This planting was near the barns and the sparrows did considerable damage to the grain.

TABLE 22—SORGHUM AND SAGRAIN VARIETY TEST

| Variety | Pounds of green corn | Pounds of grain per acre |
|---|---|---|
| Red Amber sorghum | 27007.8 | 925.9 |
| Honey sorghum | 46983.7 | 1640.7 |
| Goose Neck sorghum | 45988.0 | 1760.0 |
| Black Hull Kaffir | 29497.0 | 889.6 |
| Pink Kaffir | 19975.8 | 1198.5 |
| Double Dwf. Milo 1982 | 22029.4 | 991.3 |
| Preno Dwf. White Milo | 22962.9 | 797.6 |
| Double Dwf. Maise | 12321.5 | 807.2 |
| Hegari | 17735.5 | 769.2 |
| Darso Bred-up | 23771.8 | 2593.2 |
| Sagrain 576 | 29559.3 | 4354.0 |
| Sagrain 303-437 | 30306.0 | 4014.5 |
| Sagrain 309 | 33853.1 | 2617.9 |
| Schrock Kaffir | 23958.6 | 2836.5 |
| Spurr Feterita | 14810.7 | 784.0 |
| Japanese Ribbon | 52771.0 | 1126.5 |

## ALFALFA

A fertilizer test with alfalfa was planted early in the spring. The soil used was brown loam table land of average fertility. The continued rains destroyed two spring plantings of seed. In September the twenty-seven plots were prepared and planted with good success. On December 20 the seeding was very promising. Our results in the past have indicated that the proper time to seed land to alfalfa is around the middle of September. The land should be prepared and seeded as soon as practicable after a rain without disturbing the soil except to cover the seed with a harrow.

## BEETS

A comparatively small area was set aside at the station for testing beets as a stock feed to ascertain if they will grow in this climate and what tonnage could be expected. On average soil a very poor stand was secured and the continued spring rains made the crop expensive to cultivate. There is no question but that a heavy tonnage of beets can be grown per acre. Much care should be used in seeding the land, also in securing a fresh supply of seed. Two varieties were used in the test with the following results:

Mangel Wurzel produced ----------18,640 pounds per acre
Sugar Beet produced ----------17,769 pounds per acre

These beets have been covered with straw under a shed to be fed to cattle this winter. In using for feed the beets are chopped in pieces and fed in place of silage. Where a dairy is too small to justify a silo beets could be grown and used in place of silage to advantage.

## DAIRYING

A registered herd of Jersey cattle is owned by the station. From the time this station was established it was recognized that dairying and poultry would be necessary to furnish a market on the farm for legumes and other crops grown, and to utilize the idle lands for grazing. North Mississippi will never come into her own until dairying, poultry, cotton and feed growing become her chief industries. In the past the dairy has been run so as not to interfere with regular station work, leaving the experimental feature to the College herd at the A. and M. College of Mississippi. Most of the milk secured is sold locally at the dairy barn and the balance is separated and the cream shipped on the butter fat basis. The skimmed milk is fed to calves and poultry. This method interferes but little with regular station work.

Several projects are in progress to ascertain the value of manure measured in pounds of cotton, or other crops, also a system of rotation including forage crops suited for dairy feeds, etc. These results will be reported later.

The dairy possibilities in this section are good. Cream and milk markets are close in almost any direction, with good roads in practically every county. There are thousands of acres of idle lands that could be used in growing feed and making pastures. Good cows can be had in many sections, but the price is rapidly increasing with the increased demand. Cream separators can be had at almost one's own terms.

**How to Begin Dairying**—The following is a suggested way to begin dairying: Get together a few cows, the best available; purchase a separator if necessary and start milking. Breed these cows to a first class bull of a dairy type, and in a few years you will have a herd of cattle. Sell off the poorest producers as fast as possible and replace with good cows. Keep daily records of every cow to determine her value. Four or five real good cows will pay a greater profit than ten or fifteen ordinary milk cows. It is hard to pay too much for a real good (second or third calf) dairy cow. She should pay her purchase price the first year and be ready to serve her master the rest of her life if she is properly handled and fed. There is idle labor on the farm half the year that has to be fed all the year. The South has advantages in her favor in the mild winters, cheap lands, cheap labor and long growing seasons. Inexpensive barns can be used. We will succeed when we become "Dairy Minded" and not until then. Dairying should interfere with the growing of cotton but little, in fact in a few more years, more cotton should be grown.

**Pastures**—Good pastures are almost as essential to successful dairying as good cows. The land should be prepared by cutting the bushes and unnecessary trees, terracing to control soil washing, and breaking with a plow and seeded with bermuda grass, lespedeza, white clover, hop clover, paspalum and carpet grass.

If the land is poor, better results can be obtained by sodding the bermuda grass. If bermuda grass seed are to be sown with other grasses, probably the best date is around April 1 White clover and carpet grass can be sown in the fall or early spring on top of the sod

and secure a fair degree of success. One of the station pastures has properly supported one cow per acre for the past five years.

The pasture should be made before purchasing the cows.

**Forage Crops**—Dairying and purchasing feed is like growing cotton and buying feed for labor and work stock—it cannot be done successful under average conditions. The best forage crops for this section are soybeans, sorghum, Sudan grass, lespedeza and cowpeas. One acre per cow where good land is used is recommended for growing forage. All of the forage and feed should be grown on the farm with probably the exception of some of the grain.

Fifteen bushels of corn per cow is the usual allowance. This corn would give the best results if ground into corn and cob meal. Cotton seed can usually be exchanged, pound for pound, at oil mills for cotton seed meal. This exchange is very desirable for both the mill men and the grower. The meal has more than duoble feeding value. There is no better nor cheaper proteid feed on the market than cottonseed meal, as far as it can be used. Probably more cow trouble comes from feeding an excessive amount of cottonseed meal to dairy cattle than from any other source. With good pastures, silage, legumenous hays, corn and cottonseed meal produced on the farm, it will not be necessary to purchase more than a little wheat bran or ground oats to make as good a feed as can be purchased on the market.

Dairying does not mean less cotton, but more fertile soil on which to grow larger crops. The station has used a milking machine for the past seven years with satisfactory results. One man maintains a twenty-cow dairy and keeps a sanitary barn. With average farm labor, a milking machine is hardly necessary.

Mr. Otis B. Casanova and Mr. O. K. Morgan have assisted very materially in the success of the year's work. Mr. Leo Bate took charge of the dairy in December in place of Mr. C. M. Anderson, who resigned.

Thanks are extended to Director J. R. Ricks for the kind and pleasant way in which he has directed the work.