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Report of the North Louisiana Experiment Station for the years 1928-1929

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REPORT OF THE NORTH LOUISIANA EXPERIMENT STATION FOR THE YEARS 1928-1929

BY

SIDNEY STEWART

LOUISIANA STATE UNIVERSITY

AND

AGRICULTURAL AND MECHANICAL COLLEGE

AGRICULTURAL EXPERIMENT STATIONS

C. T. DOWELL, Dean and Director
FOREWORD

I have asked each of the Superintendents of the sub-stations to write a narrative report of the work done at his station during the last two years. You will notice that no tables are given. The details in regard to the different experiments will be reported later in bulletin form, at the time of the completion of the project or at definite stages in the progress of the project.

I think the farmers are more interested in the purpose of the project and the results obtained than they are in the details. It is for that reason that I have had the reports written in this form.

C. T. DOWELL, Dean and Director
1928-1929 REPORT

OF THE

NORTH LOUISIANA EXPERIMENT STATION,
CALHOUN, LOUISIANA.

This Station is located in Ouachita Parish, fourteen miles west of Monroe, on the Dixie-Overland Highway and on the Y. & M. V. railroad.

Three areas, not included in the experimental program, consisting of eighteen, fourteen and eighteen acres respectively, are used for producing the necessary feed for the place and for the general cotton crop. A three year rotation is practiced, with cotton, corn and velvet beans, and corn with soy beans. Cost records are kept, from preparation of soil for planting, to harvesting. No land rent is deducted from the figures given below, which are the results for the past three years:

<table>
<thead>
<tr>
<th>Cost of production and harvesting: (Average)</th>
<th>Yield per acre: (Average)</th>
<th>Profit per acre (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton $49.55</td>
<td>1362 pounds</td>
<td>$45.79</td>
</tr>
<tr>
<td>Corn 18.49</td>
<td>18.95 bushels</td>
<td>.46</td>
</tr>
</tbody>
</table>

A minimum production of 18 bushels per acre is necessary in order to realize a profit on a corn crop.

The cotton seed are handled carefully, ginned on cleaned gins and after being sacked in even weight 100 pound bags, are sold at less than breeder prices. For the past two years D & P L No. 4 cotton has been used, but for the coming season D & P L No4-8 will be planted, as it has a higher lint percentage, practically the same length staple, equally as prolific and easier to harvest.

SOIL INVESTIGATION.

Three Year Manure Rotation

The purpose of this test is to determine the effect on crop production and the mechanical condition of the soil, of a three year rotation, (corn and cowpeas, oats followed
by cowpeas, and cotton), in which stable manure and certain commercial fertilizers are applied to a certain part of the plots.

This is a modification of the original Compost work, begun 1889, in which a compost, composed of stable manure, green cotton seed and acid phosphate, was applied to half of each plot. The compost is now omitted, and stable manure is applied at the rate of 10 tons per acre broadcast and disced in; 225 pounds of Superphosphate and 75 pounds of Nitrate of Soda, per acre, are applied in the drill prior to planting. These amounts are considered equivalent in plant food to the material used in the compost.

Immediately after harvesting the corn crop, the stalks are cut and, with the peavines are turned under. The plot is seeded to oats, early in October. Immediately after harvesting the oats, cowpeas are drilled in, in narrow rows and cultivated. After the peas are harvested for seed the vines are turned under. The third year, the plot is planted to cotton. The land devoted to this work consists of three plots of 1.44 acres each, designated as Plots A, B & C respectively.

Results for the past two years are given in the table below:

<table>
<thead>
<tr>
<th></th>
<th>South Half</th>
<th>Northeast 1/4</th>
<th>Northwest 1/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLOT “A”</td>
<td>Fertilized 1 year with manure and 200 lbs. Superphosphate.</td>
<td>Has received no fertilizer since the beginning of experiment.</td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>728 pounds per acre</td>
<td>550 pounds per acre</td>
<td>261 pounds per acre</td>
</tr>
<tr>
<td>PLOT “B”</td>
<td>25.73 bushels per acre</td>
<td>14.76 bushels per acre</td>
<td>13.36 bushels per acre</td>
</tr>
<tr>
<td>Corn</td>
<td>10.57 bushels per acre</td>
<td>11.25 bushels per acre</td>
<td>10.12 bushels per acre</td>
</tr>
<tr>
<td>PLOT “C”</td>
<td>6.74 bushels per acre</td>
<td>5.92 bushels per acre</td>
<td>3.28 bushels per acre</td>
</tr>
</tbody>
</table>

RESULTS FOR 1929

<table>
<thead>
<tr>
<th></th>
<th>PLOT “A”</th>
<th>PLOT “B”</th>
<th>Oats (Per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>26.17 bushels per acre</td>
<td>23.04 bushels per acre</td>
<td>10.57 bushels</td>
</tr>
<tr>
<td>PLOT “B”</td>
<td>12.94 bushels per acre</td>
<td>17.52 bushels per acre</td>
<td>11.25 bushels</td>
</tr>
<tr>
<td>Oats</td>
<td>6.50 bushels per acre</td>
<td>14.16 bushels per acre</td>
<td>10.12 bushels</td>
</tr>
<tr>
<td>(On account of extremely dry weather, during blooming period, the peas failed to mature seed. Vines turned under.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PLOT "C"  
1039 pounds  874 pounds  304 pounds  
per acre  per acre  per acre  

Cotton Fertilizer Test

To determine the most profitable amounts of commercial fertilizer for cotton production, is the purpose of this test. It is being conducted on land typical of this section of the state, but is in a slightly higher state of fertility.

Three rows, 100 feet long, are used, with the fertilizer applied previous to planting, to the second and third rows of each plot. Four replications are used.

In the first five plots, the amounts of Nitrate of Soda and Kainit are constant, being 150 pounds and 100 pounds per acre respectively, with Superphosphate applied in amounts from none up to 600 pounds per acre, by 150 pounds units.

The Nitrate of Soda is the variable in the next six plots, being increased 50 pounds per acre in each plot, from none up to 300 pounds per acre, the amounts of Superphosphate and Kainit being constant at 300 pounds and 100 pounds per acre respectively.

Kainit in varying amounts from nothing up to 250 pounds per acre, is the variable in the last five plots, the amounts being increased in each plot by 50 pounds. Superphosphate and Nitrate of Soda are constant at 300 and 100 pounds per acre, respectively, in each group.

Check plots are grown between the groups for securing comparative yields.

In 1929 the largest gain in yield from any food element, was from potash, with the basic amounts of nitrogen and phosphoric acid, which is in accordance with the 1928 results, but in contrast to the 1927 results, when no benefits resulted from the use of potash.

The lowest yield in 1929 was from a 0-16-6, at the rate of 350 pounds per acre, while the highest was from the use of 575 pounds of a 4-10-10 mixture. It is very probable that the use of about 600 pounds of a 7-10-4 should prove most profitable for the hill region of the state.
SOURCE OF NITROGEN TEST.  COTTON

By combining different nitrogenous fertilizers with Superphosphate and Kainit, it will be determined what combinations affect most the yield of seed cotton per acre. The test is being conducted on soil to which no nitrogenous fertilizer has been applied within the past four years.

Three hundred pounds of Superphosphate and 100 pounds of Kainit, per acre, are used with each combination. Thirty pounds of nitrogen per acre, are supplied in the following materials.—Nitrate of Soda; Nitrate of Soda and Cotton Seed Meal; Cotton Seed meal alone; Leuna Salpeter; Cal-Nitro; Cyanamid; Sulphate of Ammonia; Sulphate of Ammonia and Nitrate of Soda.

The unfertilized check yielded at the rate of 790 pounds of seed cotton. The highest, 1680 pounds per acre, was from a combination of Nitrate of Soda and Cotton seed meal; second, Cal-Nitro, 1545; third, Leuna-salpeter, 1500, fourth, Nitrate of Soda and Sulphate of Ammonia, 1380, while the lowest was from Cyanamid, yielding at the rate of 1275 pounds.

SOURCE OF NITROGEN TEST.  CORN

The same materials were used in the corn test, as in the cotton test, one half of the nitrogen and all the other fertilizer applied previous to planting, the balance used as a side dressing while the corn was about waist high.

A combination of Nitrate of Soda and Sulphate of Ammonia gave the highest yield, 35.57 bushels per acre; second, Nitrate of Soda and C. S. Meal, 33.86; third, Nitrate of Soda, 33.43. The lowest yield, Cyanamid, 25.71 bushels. The unfertilized check yielded at the rate of 14.57 bushels per acre.

WINTER COVER CROPS:

In 1928, Austrian Winter Peas were planted in 24 inch drills, Nov. 22nd., in a slight depression. A good stand was secured and good growth was made by April 10th. 1929. A yield of 18.1 tons per acre green matter was taken from the plot, which when thoroughly cured out
was at the rate of 2.25 tons hay per acre. This was a shrinkage of 89%.

Further work is being done with this plant, under a better system, by which more definite results can be determined, as to its value as a source of nitrogen for subsequent crops and as a general soil builder. On account of its hardiness it is expected to prove of benefit to soils of this type.

**CLOVERS.**

Seven varieties of clovers, Hairy Vetch, Austrain Peas, Rye and Oats were each planted in separate plots, Nov. 29th., 1929. Four replications of the clovers and three of the other crops were secured. On account of the late planting date, the cold weather of Dec. 21st., killed all of the clovers. The other crops, including the vetch and peas were killed to the ground, but have since made new growth and will probably survive the winter. New plantings of the clovers will be made during February. Later plantings of the same varieties were made in the Pecan Orchard and had not germinated at the time the others were killed and seen to be in shape to pull through the winter.

All of the Pecan Orchard has had an application of lime at the rate of 2 tons per acre, while the clover plot has lime on the south half, at the same rate.

**ORCHARD.**

In 1923, a model Home Orchard was planted on two acres, consisting of several varieties of peaches, apples, plums, pears and figs. On account of the poor equipment for handling insect pests and scale, several of the trees have died and none of them has made very satisfactory growth. For the past two years, the orchard has been fairly well cultivated. The vacancies are being filled and a new orchard, in addition to the other, of summer apples, is being put in. A new "Friend" power spraying machine has been placed here, with which the trees can be thor-
oughly protected. The regular spray schedule will be followed, both dormant and during the summer.

PECANS.

The pecan orchard includes 17 varieties, none of which has made heavy yields, on account of the poor condition of the trees, from scale damage. This can be overcome by the generous use of the power spray. The varieties seeming to be best suited to local conditions are; Moneymaker, Stuart, Schley, Success and possibly Frotschers.

COTTON VARIETY TEST.

Twenty or more varieties and strains of cotton are planted in one-row plots, with six replications. The plots are treated with a moderate application of a complete fertilizer given clean cultivation during the growing season and protected from boll weevil damage by treatments of Calcium Arsenate.

The following observations are recorded: Number of bolls per pound, lint percentage, yield of lint per acre, length of staple, value of staple, value of lint and seed per acre.

While the soil of the Experiment Station, as a whole, is typical North Louisiana hill land, the plots used for these tests are fairly level and more fertile than the average.

The results obtained the past three years show high rank for certain staple varieties. It is probable though that on the poorer lands of the section, and most of the land is less fertile, that a more vigorous growing short staple cotton will be most profitable. Delfos No. 2 and Express 317 are among the most vigorous growing of the staple varieties. Dixie Triumph is a good variety to grow on land where cotton rusts and wilts badly. D & P L No. 4-8 is a good hill land variety, as it has good length for a short cotton, has a good lint percentage and is fairly disease resistant, and productive.
COTTON BREEDING.

In order to develop a variety of cotton most satisfactory for North Louisiana hill conditions, individual plant selections are made in the fields, from varieties now grown. These selections are grown in progeny rows and in strain tests and the most promising strains are increased in isolated fields. When a sufficient amount of seed has accumulated, they are distributed to growers.

COTTON DUSTING, FOR WEEVIL CONTROL.

In order to determine the profitableness of dusting with Calcium Arsenate, for the control of Boll Weevils in cotton, four 10 row plots, 420 feet long, alternated with check plots of similar area, are used. Calcium Arsenate is applied at the rate of 8 or 10 pounds per acre, with dust guns, when the infestation reaches approximately 10%. This treatment is repeated at four day intervals until three successful applications have been made. Later applications are made if necessary.

The 1928 results show a profit, above cost of dusting, of $14.10 per acre, while the results for 1929 are $6.26 per acre.

COTTON, FOLLOWING CORN AND SOY BEANS.

In order to determine the effect of soy beans on the yield of corn, and the subsequent yield of cotton following corn and soy beans, one plot of 1.4 acres is planted to corn and soy beans. Three rows are planted to corn and soy beans in four or more replications, alternating with similar plots of corn alone. Cotton is planted over the entire area the second year, in rows identical with the original rows. Results are obtained from the center row of each plot.

After 1929, five rows to each plot will be used instead of three-row plots, by which the chance of cross-feeding will be lessened.
Results for the past two years are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Bushels per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>19.5</td>
</tr>
<tr>
<td>1929</td>
<td>28.36</td>
</tr>
</tbody>
</table>

Corn alone

Cotton, alone 19.5
Cotton, with beans 16.07

The 1929 crop was grown on a different plot, which being better soil and with better seasons, produced at a higher rate. Cotton, following corn with and without beans was:

Cotton, after corn alone produced 1050 pounds per acre; following beans in corn rows, 1295 pounds per acre. Three hundred pounds of Superphosphate per acre was the only fertilizer supplied in growing the crop. Only one year's results are available.

**CORN VARIETY TEST.**

Twelve varieties of corn were planted in one row plots in 1928 and eighteen varieties in 1929, to determine the type and varieties most suitable for use in this type soil. All of the plots are well fertilized, planted at the same time and given identical treatment during the growing season. Seven replications are made and comparative results of yields of grain per acre are obtained.

The object of the test is not to secure maximum yields, but to grow the corn under average conditions prevailing over this section. Soy beans were planted in the drill with the corn and this practice should be followed where corn is grown, regardless of the types of soils. While it may reduce the corn yield some, benefit to the soil more than offsets the value of the grain lost, and is noticeable in several subsequent crops.

In 1928, the highest yielding varieties were Hastings, 1st., Whatleys, 2nd., while the 1929 results show Mosby, Cockes, Smith's Improved (a local white prolific), Stewart's Yellow Dent, Whatley placed in order named. The prolific varieties in both cases are in the lead. While the Calhoun Red Cob is not one of the highest in production, it is a valuable and popular variety. The quality is good and the production is usually satisfactory and for general
farm use, where the feed is not ground, it is more satisfactory for bulk feeding than the harder, flinty prolific varieties. Where a mill is available, for grinding the whole ear, the prolific varieties would be more popular.

**SOY BEAN VARIETY TEST.**

One-row plots, 120 feet long, with four replications are used in this investigation. One half of each plot is harvested, at the proper stage, for hay and the remainder matures and the bean yield secured.

Superphosphate, at the rate of 250 pounds per acre and Nitrate of Soda, at the rate of 50 pounds per acre, are applied in the drill prior to planting. Clean cultivation is given as the season demands.

Several Biloxi hybrid beans, besides more than half a dozen other varieties are tested, yielding from 10 bushels per acre to 21 3/4 bushels and with hay yields of from 3/4 of a ton to 1 1/4 tons per acre. None of the later varieties matured seed during the 1929 season, on account of the dry weather during the blooming period.

**STOCK AND PLAN OF PROJECT.**

Ten grade Jersey cows have been purchased, being selected by R. H. Lush, Professor of Dairy Research, La. State University. Seven have one year's production records and were bought in Lincoln Parish. Three were purchased locally and on which no records were kept. All but three of the cows have calved recently, the others are to freshen soon.

A daily record of production and feed consumed is kept and the milk of each cow tested once a month for butter fat percentage. The heifer calves are kept and after being with their mothers about three days, are taken away and raised by hand, on whole milk the first three or four weeks and gradually shifted to powdered milk. About the same time they are taught to eat a ground grain mixture, to which, later, the dry milk powder is added, discontinuing the liquid diet entirely.
The bull calves are disposed of as soon after birth as the condition of the cow permits.

A study will be made of the value of a purebred bull mated to these cows, to determine the influence in increasing the production and improving the type of the cow. Too, it is planned to show the influence on production of a more liberal and balanced feeding system than is now being practiced here. The cows are to be fed on home grown feeds as nearly as possible.

**BUILDINGS AND EQUIPMENT.**

The main barn is composed of a feed room, milk room and milking room, the entire building measuring 18 feet by 45 feet, with nine foot walls. The mangers, floors and side walls, up to three feet high, are of concrete, and the remainder is built entirely of second hand lumber. The work of building it was done entirely with Station day labor, without the aid of a carpenter. The milk room is equipped with a partly submerged cooling tank, to which an electrical refrigerating unit is attached. The milk can be cooled to a low temperature in a short time, making it possible to ship the morning milk at around 45 degrees. The whole milk is shipped and sold in bulk, in Monroe.

A shed, large enough to house all of the cows, is built south of the barn, in a separate lot, and is fitted with a trough and hay rack the full length of the building. The West, North and East sides are closed, leaving the South side open at all times. All of the roughage is fed in this shed, the milking barn having only the grain fed in it at milking time.

A calf shed and box stall is built between the barn and the highway, also in a separate lot, in which calves and cows with young calves are kept. It is also enclosed on all sides except on the south. Stanchions are placed in the shed, in which the calves are fed.
PASTURAGE.

In order to find the value of winter and summer pasture crops, in milk production, rye and oats, with other crops, as vetch winter peas, are planted in the fall and the grazing controlled during the winter. For summer grazing cultivated crops will be used, as well as permanent pastures. In the permanent pastures one half is limed, and with other treatments, the values of a permanent pasture and an all year round grazing will be demonstrated.

NEW EQUIPMENT.

During the past fall, the Director of Experiment Stations has furnished, for the use of this Station, a “Corsicana” Grading Machine, one small grain seeder, one soy bean harvester and a “Friend” power spray machine.

While the Station fields are fairly well terraced, a better system of terraces is badly needed and with the equipment formerly used for this purpose, building terraces over the whole property was a slow and expensive operation. With the “Corsicana” the use of a plow can be eliminated and in other ways, reduce the expenses of this operation considerably.

In sowing small seeds, such as clovers, the grain seeder can be used to advantage, while the soy bean harvester will reduce the expense of harvesting this crop to the point that the beans may be sold for seed at a profit.

The power spray machine is filling a long felt need. On account of not having adequate facilities for properly spraying the pecan and fruit trees, scale damage has practically killed some of the pecan trees and most of the peach trees. With this machine on hand, the proper spray schedule can be followed and all trees protected from pests at all times of the year.

With the assistance of Dr. Julian C. Miller, Head of the Horticultural Department, this work has already been started and all fruit and nut trees will be given sufficient attention to assure a fruit crop, from this standpoint.
LIVE STOCK AND FARM EQUIPMENT.

The animals for the farm work of the Station consist of five mules and one mare, all of which are either home raised or raised in the community. Two young mules have been raised here in the past five years and the purpose in securing the mare was to continue raising mules. However, no jack is within reach, so the mare has not been bred. The mare is five years old, weighs about 1200 pounds and works well at all farm work. The other three mules are getting old and will have to be disposed of within the next few years.

The farming tools consist of heavy break plows, middle bursters, harrows and two one-row cultivators. For several years, a Fordson tractor, with a two-bottom break plow and a Roderick-Lean harrow, was used to advantage, especially in preparation of the soil for planting. The whole outfit has been worn out and discarded. With new equipment of this nature, the fall and winter breaking would be speeded up, and at considerably lower cost than is now being done with the mule power. An International "Farm-All", or a machine of that type, with the necessary plows, harrows and cultivators, would suit our needs admirably.