1926

Annual report of the agricultural experiment stations of the Louisiana State University and Agricultural and Mechanical College for 1925.

W R. Dodson

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ANNUAL REPORT

OF THE

AGRICULTURAL EXPERIMENT STATIONS

OF

LOUISIANA STATE UNIVERSITY

AND

AGRICULTURAL AND MECHANICAL COLLEGE

For 1925

TO THE GOVERNOR

BY

W. R. DODSON, DIRECTOR
EXPERIMENT STATION STAFF.

W. R. DODSON, A. B., B. S., Director.
W. G. TAGGART, B. S., Assistant Director.
C. W. EDGERTON, Ph. D., Plant Pathologist.
EUGENE C. TIMS, Ph. D., Assistant Plant Pathologist.
E. V. ABBOTT, Ph. D., Assistant Plant Pathologist.
HARRY MORRIS, D. V. M., Bacteriologist and Veterinarian.
W. E. HINDS, Ph. D., Entomologist.
HERBERT SPENCER, Ph. D., Assistant Entomologist.
G. L. TIEBOUT, B. S., Horticulturist.
J. F. BREWSTER, Ph. D., Research Chemist.
W. M. L. OWEN, B. S., Research Bacteriologist.
JANE E. DALE, Ph. D., Research Chemist in Nutrition.
D. N. BARROW, B. S., Sugar Cane Specialist.
J. J. MUNSON, B. S., Sugar Engineering.
A. F. KIDDER, B. S., Agronomist.
A. P. KERR, M. S., Chief Chemist.
W. P. DENSON, B. S., Assistant Chemist.
C. C. MORELAND, B. S., Assistant Chemist.
J. H. JOLLY, B. S., Assistant Chemist.
JESSE L. FARR, M. S., Assistant Chemist.
C. R. HUMMEL, B. S., Custodian.
MRS. RUTH HEIDELBERG, Secretary to Director.
J. K. McHUGH, Librarian.
MRS. M. A. CARLETON, Student Assistant to Librarian.
B. H. THIBODEAUX, Student Assistant, Research Laboratory.
SHELBY JACKSON, Student Assistant in Entomology.
OTIS BROUSSARD, Student Assistant in Fertilizer and Feed Stuffs Laboratory.
D. J. DE ARENSBOURG, Farm Overseer.

North Louisiana Experiment Station, Calhoun.
SIDNEY STEWART, B. S., Superintendent.

Rice Experiment Station, Crowley.
J. MITCHELL JENKINS, B. S., Superintendent.
HELEN ANDRUS, Stenographer.

Fruit and Truck Experiment Station, Hammond.
B. SZYMONIAK, B. S., Horticulturist in Charge,
To His Excellency, Henry L. Fuqua,
Governor of Louisiana,
Baton Rouge, La.

My Dear Sir:

I submit herewith, the Annual Report of the Agricultural Experiment Stations of Louisiana State University and Agricultural and Mechanical College, for the year 1925.

I am including also the financial statement of receipts and expenditures under all funds, the Hatch Fund, Adams Fund, and Purnell Fund from the Federal Government; the State appropriation to the Experiment Station, and all other revenues received and disbursed by me as Director of Experiment Stations for the calendar year, 1925.

As required by Act of Congress of March 2, 1887, (Hatch Act) and March 2, 1906 (Adams Act) a financial statement of these two funds is submitted, for the fiscal year, beginning July 1, 1924, and ending June 30, 1925.

Very respectfully,

W. R. Dodson,
Dean and Director.
MISCELLANEOUS

The Director of Experiment Stations has continued to serve as Chairman of the Cotton Production Council of the Association of Southern Agricultural Workers, in tabulating results of boll weevil experiments in the several states. He was chairman during the past three years, of a Special Committee of the Association of Land Grant Colleges, to carry on educational work in behalf of the Purnell Bill, for increasing the Federal Appropriations for Experiment Station work. The Purnell Bill was passed by Congress in February, 1925, and became effective July 1st, 1925.

The Director also has continued to serve on the Advisory Council of three, of the Agricultural Commission of the American Bankers Association. Numerous other activities in the general interest of agriculture, have each taken a part of the time of the Director of Experiment Stations.

A series of field meetings of sugar planters was held at the Sugar Station during July, at which time approximately a thousand visitors were in attendance.

A bankers meeting was held on the Experiment Station plots, with about twenty banks directly interested in sugar cane sending representatives.

A general field meeting was held at the Sugar Station in October, with an attendance of about one hundred.
## FINANCIAL REPORT OF THE LOUISIANA AGRICULTURAL EXPERIMENT STATIONS
### YEAR 1925.

<table>
<thead>
<tr>
<th>DR.</th>
<th>Hatch Fund</th>
<th>Adams Fund</th>
<th>State Fund</th>
<th>Purnell Fund</th>
<th>Fertilizer Feed Fund</th>
<th>TOTAL</th>
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<td>Interest, Daily Balances</td>
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<td>Transfer from Fertilizer Fund</td>
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<td>Commissioner of Agriculture</td>
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<td>Total Receipts</td>
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<td>Grand Total</td>
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<td>$ 10,000.00</td>
<td>$ 35,349.86</td>
<td>$153,262.75</td>
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<table>
<thead>
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<th>CR.</th>
<th>Hatch Fund</th>
<th>Adams Fund</th>
<th>State Fund</th>
<th>Purnell Fund</th>
<th>Fertilizer Feed Fund</th>
<th>TOTAL</th>
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### FINANCIAL REPORT OF THE LOUISIANA AGRICULTURAL EXPERIMENT STATIONS
YEAR 1925.—(Continued)

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<th>Hatch Fund</th>
<th>Adams Fund</th>
<th>State Fund</th>
<th>Purnell Fund</th>
<th>Fertilizer Feed Fund</th>
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<td><strong>Refund to Bank of Baton Rouge</strong></td>
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<td><strong>Total Expenditures</strong></td>
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<td><strong>Total Expense and Transfer</strong></td>
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<td><strong>Total</strong></td>
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<td>763.98</td>
<td>633.19</td>
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<td>4,071.92</td>
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<td><strong>Grand Total</strong></td>
<td>$17,944.42</td>
<td>$15,000.00</td>
<td>$74,968.47</td>
<td>$10,000.00</td>
<td>$35,349.86</td>
<td>$153,262.75</td>
</tr>
</tbody>
</table>

*Amount borrowed before appropriation was available.
†Partial refund of amount borrowed from Bank.
SUPPLEMENTARY STATEMENT.
Hatch and Adams Funds.
For Fiscal Year, Ended June 30, 1925.

Dr.
Received from the Treasurer of the United States, as per appropriation for fiscal year, ended June 30, 1925, under Acts of Congress, approved March 2, 1887 (Hatch Fund) and of March 16, 1906 (Adams Fund) $15,000.00

<table>
<thead>
<tr>
<th>Hatch Fund</th>
<th>Adams Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>$15,000.00</td>
<td>$15,000.00</td>
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</tbody>
</table>

Cr.
Salaries $7,496.95 $12,606.20
Labor 2,536.28 1,008.77
Stationery and Office Supplies 6.35 6.03
Scientific Supplies, consumable 134.37
Feeding Stuffs 521.85 64.35
Sundry Supplies 796.56 132.64
Fertilizers 741.97
Communication Service 49.57 70.13
Travel Expense 282.50 106.89
Transportation of things 177.70 10.88
Publications 4.50
Heat, Light, Water and Power 98.94 74.09
Furniture, Furnishings and Fixtures 55.75 6.00
Library 78.35 48.49
Scientific Equipment 679.06
Livestock 728.00 30.00
Tools, Machinery and Appliances 1,055.09 7.10
Buildings and Land 243.64 15.00
Contingent Expenses 126.00

$15,000.00 $15,000.00

DEPARTMENT OF AGRONOMY.

A. F. KIDDER, Agronomist.

The work of this Department was moved from the old Station to the site of the University during the early part of the year. All old plats were abandoned and new ones were laid out on the new area. A small portion of the work is duplicated on the alluvial land.

SOIL FERTILITY.

TWO-YEAR ROTATION.

Six acres of fairly uniform upland were divided into 120 one-thirtieth acre plats; two series of 60 plats each. The two year rotation of cotton and legume is planted on these
series of plats. Oats are sown over the entire area in the fall and plowed under during February of each year. One-half of each series is planted to cotton and the other half to corn and legume each year. The fertilizer results are duplicated once.

Nitrate of soda, acid phosphate and kainit are the fertilizing materials used. Varying combinations of these materials are applied to the cotton while nothing is added to the corn. The residual effect of the fertilizers applied to the cotton will be noted in corn yields. This was the first year for this project.

THREE-YEAR ROTATION.

A three-year rotation of cotton, corn and legume and soybeans occupies a four and a half acre area. There are 72 one-twenty-sixth acre plats, 24 planted to each crop every year. Oats are sown after cotton and corn and plowed under early in the spring.

One, two, and three tons of finely ground oyster shells are applied with varying amounts of nitrate of soda, acid phosphate and kainit to the cotton. The residual effect of the fertilizers will be noted in the corn and soybeans. This was the first year for this project.

NITRATE OF SODA AND COTTON.

A study of the varying amounts of nitrate of soda as a top dressing to cotton is another new project. Fifty to two hundred and fifty pounds of nitrate of soda are used. Three hundred pounds of acid phosphate and one hundred pounds of kainit are applied to all plats before planting. This, as well as other soil fertility projects, will be continued.

CORN VARIETIES.

Twelve varieties of corn were planted this year on both upland and alluvial land. The hill check system was used with the White Calhoun as the check variety. As noted in previous years, the prolific varieties were the heaviest producers. Cock's Prolific seems to be outstanding. There was considerable variation as to suckers and barren stalks among the different varieties. Those producing the highest yields had the smallest per cent of barren stalks and other deleterious characters.
OAT VARIETIES.

Four varieties of oats were planted. The Patterson and Ferguson No. 71 were the best in yield. There is very little difference in the growth of the various rust resistant varieties of oats. Farmers, however, are strongly urged to buy Louisiana grown seed oats. Fields planted to seed obtained from other sections in the South have been inspected and a number of types of oats have been found. The yield of such fields has been low.

COTTON VARIETIES.

Forty different strains and varieties of cotton were planted this season. Half and Half was one of the lowest producers, with short, stiff and coarse lint. This variety is not recommended for any section. Dixie-Triumph, Cleveland, and Mexican Big Boll are the leading short staple varieties this season. Lone Star 65 was quite promising; Lightning Express and Delfos 6102 were the best long-staple cottons.

SUGAR BEET VARIETIES.

Eight different varieties were planted. Several new ones were added, while some that had not given very good results were not included. Adverse weather conditions prevented planting until February, 1925. The dry weather of early spring reduced the yield very perceptibly on the upland but did not seem to affect the lowland planting. It did cause a very high sucrose content which was decreased by several per cent as soon as the wet weather of June began. The results are very similar to those published in Bulletin No. 192.

SOYBEAN VARIETIES.

Thirteen different varieties of soybeans were planted on both alluvial and upland. Yields of hay were obtained. The beans produced practically no seed. Hot and humid weather during the blooming period prevented pollination. This same condition occurred in 1921. Late planting in this latitude is the only sure method of producing a soybean seed crop; this will reduce the yield.

A manuscript on soybean varieties was prepared and presented to the Director of the Experiment Stations; it has not yet been published.
LESPEDEZA.

The plantings of Kobe and native Lespedeza were practically a failure, due to the dry weather of early spring. Sufficient seed was produced by both varieties, however, to give a fair crop in 1926. The Kobe variety seems to be very promising. Its greater growth produces a higher yield of hay without decreasing the quality.

PLANT BREEDING.

COTTON.

The best strains of Louisiana No. 19 bagged and open pollinated seed were planted. Fair yields were obtained. The lint was shorter than usual, probably due to adverse weather conditions. Several strains have been selected for planting on a larger area in 1926. Long lint, high per cent of lint and open type plant are main characters sought.

OATS.

The strains of oats were planted in rod rows, December, 1924. These strains are practically pure lines. Yields were extremely good, many of them producing ninety bushels per acre. The best strains were selected and planted in 1/10 acre plats for further testing. Other promising strains were continued in rod row beds. A few strains were distributed over the State.

SOYBEANS.

A few promising field hybrids were selected several years ago. One which is probably a cross between the Otootan and the Biloxi appears to be quite promising.

CORN.

Intensive corn breeding investigations in cooperation with the office of Cereal Investigations, United States Department of Agriculture, were continued along the same lines as during the preceding two years.

The State carried the overhead expense on this project, furnishing the land, fertilizers and common labor. The Office of Cereal Investigations carried the other expenses, a full time Agronomist and supplies. H. F. Stoneberg has conducted this work.
In all commercial open-fertilized varieties of corn, various deleterious characters are present, which tend to reduce production. Among these injurious characters are barrenness, weak stalks, weak roots, twisted and crinkled leaves, deficient chlorophyll, short and loose husks, and susceptibility to different diseases and insect pests, which reduce the stands, yields and keeping quality of open fertilized corn. In the investigation by self-pollination, strains free from these harmful factors have been isolated by continued selection. The re-combination of these pure strains, after eliminating undesirable characters, is necessary to restore vigor and high production. The hybrids from some of the re-combinations of these strains, possessing desirable characters among which are long and tight husks extending beyond the tip of the ear, when grown in the field in comparison with the best commercial varieties, have already produced substantial increases in yield and have shown resistance to ear-worm attack and to weevil damage before and after storage.

**PUBLICATION.**

Report of Cotton Variety Tests. (Mimeograph.)


**DEPARTMENT OF ANIMAL PATHOLOGY.**

HARRY MORRIS, Bacteriologist.

During the year 1925, the work in the Department of Animal Pathology was continued under the same plan as in preceding year. The major part of the time was devoted to teaching Veterinary Science and to the care of the live stock on the College farm, while the minor portion was given to Station work.

**ANTHRAX.**

The anthrax project was continued. A study of the life history of anthrax spores in soil, under various conditions of temperature and moisture, which has been in progress for several years, was continued. Some interesting results have been obtained from a series of experiments, in which
various plants were grown in soil inoculated with anthrax spores. After the plants had grown to a certain height, they were examined for the presence of anthrax spores. Anthrax cultures have been recovered from plants resulting from seeds and cuttings planted in inoculated soils. This work will be published in the near future.

The custom of annually vaccinating all of the College livestock with anti-anthrax serum and spore virus, was continued and another year passed without the loss of a single animal from the disease.

During the summer of 1924, Louisiana experienced one of the most extensive outbreaks of anthrax in the history of the State. A great many blood smears were received at the laboratory, for examination. While in 1925, very few local outbreaks of the disease appeared in the State, and only one positive diagnosis of anthrax was made in the laboratory during the year. This is the lowest number ever recorded since the establishment of the laboratory.

The announcement of the death of Dr. W. H. Dalrymple has been given in the preceding report, by Director Dodson. This report, however, would be incomplete without some tribute to his life and work in the Experiment Station.

Dr. Dalrymple was one of the greatest exponents of disease prevention and control, through the enforcement of the laws of sanitation and preventive inoculations. His weekly articles to the press on the subject of livestock sanitation, were read by many people. He knew that his ideas concerning disease prevention were sound and could be practiced in this state with a fair degree of success, because they had been followed, as far as possible, in caring for the health of the University livestock, especially the dairy herd. Until the University was moved to the present location, the equipment was about the same as that found on any good farm. The following is a short summary of the results obtained:

Covering a period of fifteen years, there have been three cases of anthrax among the livestock. One animal was brought on to the farm inoculated with the disease. There has been one case of blackleg among the calves. During
this period of time, six animals in the dairy herd reacted to the tuberculin test. Four of these reactors were imported onto the farm but were removed before much harm was done to the healthy herd.

The most serious outbreak of any infectious disease occurred in the dairy herd during 1919, when the calf crop was lost from infectious abortion. We have demonstrated that this disease can be controlled by the observance of sanitary measures.

Four cases of actinomycosis, or "lumpy jaw" have developed, but they responded to treatment without loss to the herd. A few cases of hemorrhagic septicemia have occurred in the calf herd.

During the past fifteen years, white scours has not appeared among the calves. Texas fever has been held in check for many years.

Dr. Dalrymple was very proud of the fact that his teachings concerning disease prevention and control, through the practice of sanitation and preventive inoculations would give fair results if properly executed.

DEPARTMENT OF BACTERIOLOGY.

W. L. OWEN, Bacteriologist.

The work of this department for the past year, has proceeded in four definite phases, viz,

1. Research Laboratory Investigations.
2. Preparations for the evacuation of the Station at Audubon Park.
3. Assembling the equipment in the new quarters.
4. Resumption of laboratory investigations at the new University.

The first phase of the work proceeded until the middle of June, when preparations were begun for terminating the investigations to write up the results in bulletin form. Actual work of crating, packing and shipping laboratory equipment and supplies was under way by the latter part of July, and early in the month of September the Station build-
ing at Audubon Park was turned over to the park authorities, and the new quarters at Baton Rouge were occupied in the latter part of the month.

Owing to the fact that the new chemical building was still incomplete, it was not until the early part of November that laboratory work was practicable in our new quarters. The work of shipping the equipment and supplies from the old to the new site proceeded without any interruption, and the laboratory equipment came through with a minimum amount of breakage or damage. The new quarters occupied by the Department are excellent in every respect, and the prospects for the progress of the investigations under the greatly superior facilities offered by the modern building and its unexcelled equipment, are most promising.

RESULTS OF RESEARCH INVESTIGATIONS.

The investigation of the Protective Process for the prevention of sugar deterioration was carried out without interruption during the first six months of the year. The results from an extensive series of experiments carried out showed that when properly applied, a protective film of inoculated molasses, very effectively suppressed all deteriorative changes induced by microorganisms. A large number of raw sugars were filmed with inoculated molasses containing varying numbers of torulae, and varying percentages of CO₂, and the effectiveness of the treatment observed. Especial attention was given to the consideration of the number of torulae required for the protection of sugars of different "Factor of Safety" and also the concentration of CO₂ required to afford initial protection against the action of mold fungi. A CO₂ content of .036% was found to be sufficient to prevent the inversion of sucrose in the molasses films of sugars by the mold fungi. The value of the initial and final increases in polarizations of sugars treated according to this method averaged $2.50 and $5.94 respectively per ton of sugar treated.

The cost of applying the process should be more than equalized by the increases in initial value resulting from the increases in polarization.
The experiments on this phase of the problem of sugar deterioration showed that not only do the treated sugars increase in polarization during storage, but owing to their loss of levulose, are much less hygroscopic and tend to lose moisture under conditions where the untreated samples would actually absorb it. The treated sugars are also lighter in color, due partly to the loss of levulose and partly to the entrained CO₂ in their films.

**PUBLICATIONS.**

The results of the investigations on this phase of sugar deterioration were prepared for publication in the early part of June and submitted, with a view of having it published as a Station bulletin. However, owing to the fact that the department was already contributing a series of articles dealing with the economic phases of the problem of sugar deterioration, and including the data from all of the various publications on the subject, it was decided to also include in this series these latest results of our investigation. The series of articles embrace ten chapters appearing in numbers VIII to XX of "Facts About Sugar."

**NEW PROBLEMS FOR INVESTIGATION.**

The change of location of the Station, from Audubon Park to Baton Rouge, coincides with a change of projects for this Department. Up to this time problems of biochemical changes in sugars and sugar house products, and studies of types of fermentation of syrups and molasses, have occupied our exclusive attention. From now on, the Department will include soil problems in its program of investigation. Two such problems are already outlined and actual preliminary work is already under way on both of them.

The first of these problems is a study of the effect of cane trash upon the nitrogen of the soil, with particular reference to the stimulating effect it may have upon denitrifying bacteria. Work on this problem is already under way on both of them.

The first of these problems is a study of the effect of cane trash upon the nitrogen of the soil, with particular
reference to the stimulating effect it may have upon denitrifying bacteria. Work on this problem is already under way, and experiments have already been initiated, the results of which should throw some light upon this subject.

Concurrently with the work on this project, studies are already in progress on the qualitative and quantitative bacteriological flora of our Experiment Station soils. A comparative study of various culture media for soil studies is also in progress.

EXPERIMENTS WITH ADCO MANURE.

In cooperation with the Assistant Director, experiments upon the preparation of manure from rice straw, by the use of the leading material called “ADCO,” furnished us by the Agricultural Development Company, of Harpenden, England, are already in progress. These results should be of very great interest, since they may lead to a more efficient and profitable use of our crop residues in promoting soil fertility.

INVESTIGATIONS ON THE UTILIZATION OF BAGASSE FOR POWER ALCOHOL.

Another project that is to engage some of the attention of this Department, is the possibility of recovering the residual sugars from bagasse by fermentation prior to its use for building board manufacture or for fuel. Preliminary experiments have already begun on the fermentation of bagasse, which are to be followed by the utilization of bagasse as a material for the preparation of a manure.

Under the superior facilities that exist in the new quarters for research work, it is our confident expectation that the work of this Department should, from this time, reflect these enhanced opportunities, both in the character of research undertaken and in the progress made thereupon.

DEPARTMENT OF CHEMICAL RESEARCH, LOUISIANA SUGAR EXPERIMENT STATION.

J. F. BREWSTER, Research Chemist.

The main project of the research chemical department of the Sugar Experiment Station for many years, has been
the study of cane juice clarification. In the past year these studies were continued and some attention was given to clarification with the production of table syrup in view.

CANE JUICE CLARIFICATION FOR TABLE SYRUP.

It has long been recognized that the best grades of table syrup manufactured from cane are made by the open kettle process, in which no chemical treatment or filtration is used for clarification. What clarification takes place is the result of skimming the rapidly boiling juice and allowing the hot syrup to settle. No doubt the characteristic flavor of open kettle syrup is due, in part, to the presence of what, in sugar making are termed impurities, and in part, also, to the high temperature evaporation which, in effect, is nothing more than thorough cooking, a necessity in the preparation of most foodstuffs.

At the time of cane harvest in 1924, there was a good demand for table syrup at high prices, and it was very timely to try the manufacture of syrup on a larger scale in houses equipped with vacuum evaporators instead of open kettles. Some sort of preliminary clarification is necessary when vacuum evaporators are to be employed. Treatment of the juice with lime alone yields a syrup usually dark in color and with a flavor resembling that of molasses. Syrup prepared by sulfuring and liming the juice meets with a rather restricted demand, for the reason that most consumers object to the slight taste imparted by small amounts of sulfites. A much more palatable sulfur-treated syrup results when evaporation takes place entirely, or is finished at atmospheric pressure. In fact, open evaporation, or at least open finishing, would seem in our experience, to yield better syrup than low pressure evaporation for any given method of clarification.

When the price of syrup warrants it, filtration of the juice with diatomaceous earth, or with a limited amount of decolorizing carbon, is feasible as far as the quality of open boiled syrup is concerned. Clarification with phosphoric acid and lime also yields good syrup and the process of treatment is simple because settling may be resorted to as
in the ordinary defecation method of sugar manufacture. A good clarification with phosphoric acid may be obtained by increasing the acidity of the juice by 1 to 1½ cc. N/10 in a 10 cc. juice sample and liming back to approximately the natural acidity of the juice. The cost for phosphoric acid will increase the cost of making syrup by one-half to one cent per gallon. Calcium carbonate in the form of precipitated chalk reacts with phosphoric acid to remove the latter as insoluble calcium phosphate. An excess of calcium carbonate will not lead to undue darkening of the juice nor will it reduce the natural acidity of the juice by more than half. Further calcium carbonate may be added to the hot juice without producing the so-called burning effect of lime under the same conditions. Precipitated chalk alone has proven to be a good clarifying agent for syrup making and may be added to the juice in water suspension in the same manner as lime is now added, the mixture being heated and allowed to settle; or it may be filtered if a large excess is used. It is realized that no Louisiana sugar houses are at present equipped for freshly preparing precipitated calcium carbonate. It is also true that only a limited number of houses are making syrup every year. However, if the growing of sugar beets in Louisiana proves to be a profitable undertaking and beet sugar processes are installed, there is every reason to believe that such processes may be so modified as to be useful in the large scale production of good table syrup from cane.

**DECOLORIZING CARBONS.**

The study of methods for the preparation of decolorizing carbons has been continued with attention being directed to the utilization of sugar cane bagasse as a raw material. Good carbons were prepared at the Sugar Station from bagasse several years ago. The present work has as its object the simplifying and cheapening of methods,

**REMOVAL OF THE SUGAR EXPERIMENT STATION FROM AUDUBON PARK TO BATON ROUGE.**

At the beginning of 1925, the sugar house at Audubon Park was dismantled and the machinery and fittings later
shipped to Baton Rouge, where they were installed in the new sugar house. In August and September of this year, the laboratories at the Park were also dismantled and the equipment forwarded to the new University. The writer was unable to participate in the dismantling of the laboratories on account of illness, which began in midsummer. The Chemical Research department of the Sugar Station is now located in the Chemistry building of the new University, where excellent rooms are provided.

**DEPARTMENT OF ENTOMOLOGY.**

W. E. HINDS, Entomologist.
HERBERT SPENCER, Assistant Entomologist.
SHELBY JACKSON, Student Assistant.

During the year 1925 slightly more than one-half of the time of the Entomologist has been devoted to Experiment Station work. Assistant Entomologist William G. Bradley resigned, effective June 5th, 1925. In his stead Herbert Spencer, Ph. D., became Assistant Entomologist late in September 1925. During the year, Messrs. T. P. Dutch, Shelby Jackson, and Leon Mitchell have assisted in carrying on this work. Mr. H. L. Alford conducted the investigation of Bakers' New Arsenical.

During 1925, the three major current projects for investigation have been:

1. The control of the Mexican cotton boll weevil.
2. The control of the cotton plant louse.
3. The sugar cane borer and its control.
   Investigations of minor importance have included:
   1. The control of plant lice on turnips, cabbage, cauliflower, collards, roses, etc.
   2. Onion thrips control.
   3. Horn fly control and repellants.
   4. Spraying versus dusting for control of curculio and brown rot of peaches.
   5. Home-made oil emulsions for control of San Jose Scale.
6. An investigation of an outbreak of a caterpillar (Acrolophus species) destroying grass on lawns and in pastures.

7. Calcium and sodium fluosilicates as insecticides.


9. Toxicity tests on cotton for boll weevil control.

NEW PROJECTS.

During the year a new project has been outlined with Dr. Spencer as leader, and is entitled "Cattle Parasites and Their Control." This project contemplates a study particularly, of the internal parasites of cattle and constitutes an exceedingly important pasture problem in this State.

BOLL WEEVIL CONTROL.

In the study of the boll weevil, the hibernation tests started in the fall of 1924, included 1956 weevils placed in cages between October 4, and 15. Of these, only one weevil, or 0.005 per cent, emerged, the following spring, and this was on May 15. Among 5,370 weevils placed in cages from October 31 to November 29, 1924, 483 weevils, or practically 9 percent survived. Weevils began to leave winter quarters in the cages by the middle of February 1925, before cotton was planted in this section. The peak of the emergence movement occurred during the last week of April, and the last weevil appeared on June 12. The per cent of survival, as a whole, was unusually high and indicated a serious degree of attack on the 1925 cotton crop in the vicinity of Baton Rouge. This forecast was fully upheld by the heavy weevil development occurring during the season.

In the insecticidal control phase of the work, over seventeen acres of cotton were included in the tests and check plats in our regular series of weevil control tests. These included nine unpoisoned check areas, from which an average yield of 785 pounds of seed cotton per acre, were picked. From fourteen dusted plats an average yield of 1,308.5 pounds of seed cotton per acre was secured. This shows an average net increase in yield saved from boll weevil destruction by the poison applied, amounting to 523.5 pounds of
seed cotton per acre. This gain from poisoning amounted to two-thirds of the total yield secured without the use of poison.

The average number of dust applications given to all treated plats was seven, with a range of from five to ten. The dosage of calcium arsenate applied averaged approximately 6.5 pounds or 45 pounds per acre as the total for the season. The average cost for poison used was approximately 9 cents per pound.

Besides the foregoing tests, a general program of complete dusting for weevil control was applied to six cuts of cotton grown by Professor A. F. Kidder, in agronomic experiments where no check areas were left, but the location of the plats was such that the figures for average check yield given above—785 pounds—may be compared very fairly with the average of 1490 pounds secured on these six plats. This indicates a gain from the general dusting on these plats amounting to 705 pounds per acre on the average. Infestation records were taken every few days on this entire acreage, and the degree of weevil control secured as shown by the reduction in infestation, was quite closely comparable on both series of tests.

**AIRPLANE DUSTING.**

The application of calcium arsenate to cotton for weevil control by means of airplanes was undertaken in a commercial way and upon a large scale in Louisiana, for the first time, in 1925. The Huff-Daland Dusters, Inc., was the only concern in the field this year. This work was closely watched from the experimental standpoint, also. With four airplane dusting units at work, more than 50,000 acre-applications were made to cotton for weevil control. In addition to this, large areas were treated for cotton leaf worm control, and a small amount of work was done for control of the cotton plant louse. While no real checks could be kept, and picking records are incomplete and less reliable than required in our Experiment Station work, we have reason to believe, from the records showing the reduction in weevil infestation occurring as a result of this dust-
ing, and from the very notable increases in yield secured as a rule, where such poisoning was done, that the results secured from airplane work were at least as good as those described above from ground machine work. There would seem to be an excellent prospect in Louisiana for the expansion of airplane dusting for boll weevil control.

COTTON PLANT LOUSE CONTROL.

The poisoning of cotton for boll weevil control has undoubtedly some direct effect in increasing the infestation by the cotton plant louse. These lice are frequently seriously abundant even where no poison is applied. The control of these lice has been one of our major problems and we believe that a fairly satisfactory and economical solution has been found. The experimental work of 1925 has more than confirmed the indications found during a previous study of this problem in the fall of 1924. The plant louse infestation of 1925 was unusually severe and threatened early defoliation of most of the poisoned plats early in the season. Whenever this threat became serious it was found that an immediate application of a combination of one-half pound of nicotine sulphate, containing forty percent of nicotine with eight pounds of calcium arsenate used as the carrier for the nicotine, applied during periods of still air, by the same machinery and in the same manner as used for boll weevil control, gave excellent results in plant louse control also.

The most important factor in securing satisfactory control appeared to be a practically still condition of air for a short time, at least, after the mixture was applied. Under such conditions it was so effective that more than ninety-eight percent of cotton plant lice were destroyed, and in several cases the control was so complete that no further treatment for the lice became necessary during the season. In some cases, however, a second treatment was necessary.
"CALARNIC DUST."

For the mixture of calcium arsenate with nicotine sulphate, we have suggested the use of the common name, "Calarnic Dust," just as the name "Nico Dust" is used commonly for mixtures of nicotine sulphate with hydrated lime or other non-poisonous carriers. The latter mixture may be used for plant lice alone, or where no chewing insects are concerned. The formula used consisted of eight ounces of nicotine sulphate thoroughly mixed in eight pounds of high grade calcium arsenate and this mixture contained approximately 2.4 percent of nicotine.

HOME MIXING DEVICE.

Simple equipment has been devised for preparing on the farms, fresh mixtures of either of these dusts from stock material. An illustration and a previous description of a diagonal axis mixing drum turned by a crank, is given in Louisiana Extension Circular 79. An improvement over the use of small rocks, suggested in that Circular, for rolling and grinding agents, consists in the substitution therefore in each mixing drum used, of two or three pieces of old iron piping, or of straight wooden rollers cut about two inches shorter than the inside measurements of the drum in which they are to be used. Such rollers may be of any diameter from three-fourths inch pipe to two inch wooden rollers but they should have sufficient weight to accomplish efficient rolling and mixing of the dust. The use of such rollers makes it unnecessary to run the mixed dust through a screen, and the mixture may be left in the drum if desired, until it is transferred to the hopper of the dusting machine.

When a considerable quantity of "Calarnic Dust" is needed, we recommend making a modification of a sled-like framework device suggested in Maryland Bulletin No. 261, so that two, three, or even more mixing drums may be used at a time and rolled along the ground for at least five minutes as the sled is drawn back and forth by horse or mule. The metal drums in which calcium arsenate is usually sold, are very satisfactory for these mixing drums, and the dimensions of the sled may be made accordingly.
Home-made sled for rolling drums in mixing nicotine dust. Length of sled may be made to accommodate 1, 2 or 3 drums at a time.

With such apparatus, about thirty-two pounds of hydrated lime and two pounds of nicotine sulphate may be mixed in each drum, and a total of approximately one hundred pounds may be prepared in about fifteen minutes, by a three-drum outfit of this kind. Such home-made mixtures should be at their maximum strength and freshly used, while their cost is much below that of commercial preparations and they may be prepared very easily when needed.

SUGAR CANE BORER.

The sugar cane borer was not especially abundant in Louisiana in 1924, but became exceedingly injurious after the first of August, 1925. Our attention has been given principally to testing measures for controlling this pest and for studying the work of the egg parasites upon the eggs of the cane borer and the effect of various agricultural or control measures upon the hibernation of both borers and parasites. Heretofore we have had no effective insecticidal control applicable to sugar cane for this important pest.

Through the generous cooperation of Huff-Daland Dust-
ers, we were able during September to determine the effectiveness of several insecticides applied to the cane by one of the airplanes previously used in boll weevil control work. The distribution of calcium arsenate poison appeared to be very ideal, but one and two applications failed to kill any large proportion of the borers. It appeared that the larvae were able to travel over and work through the calcium arsenate dust without devouring it in lethal quantity. Practically no dead worms were found in extensive examinations of the cane dusted with straight calcium arsenate.

In another test, in which five percent of dextrine was mixed with the calcium arsenate, there seemed to be an increase in its effectiveness, and about twenty percent of the borers were found dead in, and on, such treated cane. The most promising results, however, were secured from an application of sodium fluosilicate, applied by a plane. The particular material used was in very poor condition for dusting but still gave a very encouraging degree of control. Examinations made four and five days after the dust was applied, showed very few living larvae of any size, while more than ninety percent of the larvae of all sizes were found dead on the leaves and within the stalks where the fluosilicate was plainly in evidence on the foliage. We were surprised to find many nearly grown larvae dead within their burrows. It appeared that the killing effect continued for a number of days after the dust was applied. No serious burning of the cane resulted from the application of undiluted sodium fluosilicate. These encouraging results will form the basis for much more extensive experimental work planned for 1926.

MISCELLANEOUS INVESTIGATIONS.

In the miscellaneous minor investigations, very satisfactory control of plant lice was secured by "Calarnic" 2.4 percent dust, applied to turnips, mustard, and similar crops commonly grown in beds, and also in the treatment of aphids, on roses particularly. The onion thrip was not controlled by dust as effectively as by spray applications containing nicotine and soap.
The horn fly, as a pest on dairy cattle especially, has been controlled or repelled quite effectively by a method of spray treatment worked out by Mr. Bradley. The preferred formula consisted of one pint of water and one-fourth pound of fish oil soap, heated together until the soap is thoroughly dissolved. To this soap solution is added one quart of red pine oil. This mixture is brought to the boiling point and emulsified by pumping under pressure. To this emulsion may be added 30 cc of Derrisine liquid or 90 cc. of free nicotine and 250 cc. of creosote. The entire mixture is fully emulsified by further pumping and forms the stock solution, one part of which is used with twelve parts of cold water to form the spray. This material was applied to cattle by a barrel pump connected with piping so that two nozzles were placed on each side of a chute through which the cattle were driven for treatment. The spray from the four nozzles formed a solid sheet of spray through which the cattle passed quickly and a very large proportion of the horn flies were hit by the spray before they could take flight.

In the peach dusting and spraying work, conclusions were impossible because the crop was entirely removed by thieves just as it began to mature.

Sodium fluosilicate was tested for control of the boll weevil and of the cane borer, in field operations, and was also tested quite carefully in comparisons with other poisons for the boll weevil in cage toxicity tests. Calcium fluosilicate was obtained only late in the season and but little field work was possible with it, but it appeared that this material is probably less toxic to foliage and also less toxic to insects than is the sodium fluosilicate.

The investigation on Bakers New Arsenical was conducted through a cooperative agreement by which H. J. Baker and Brothers, New York, supplied materials and bore the expense for about ten week's study of this problem by Mr. Alford. In these tests Baker's New Arsenical was compared with calcium arsenate and with various other poisons to see whether the new material possessed any distinct advantage over materials previously used. As a gen-
eral result, we can state that the Baker's New Arsenical showed a fairly high degree of insecticidal effectiveness, but as a rule, this was not equal to that of calcium arsenate applied at the same time. Killing by the New Arsenical was somewhat slower than with calcium arsenate. No serious burning of cotton foliage was noted in any of these tests and the new material did not show any marked superiority in adhesion in spite of the rains. There was some evidence of a repellant effect to boll weevil by the New Arsenical during the first few hours after the dust was applied but this did not continue beyond that time and did not prevent a very considerable degree of feeding on, and oviposition in the dusted squares.

DEPARTMENT OF HORTICULTURE  
(At Baton Rouge)  
G. L. TIEBOUT, Horticulturist.  

CONTINUATION OF STRAIN TEST WORK WITH CERTIFIED TRIUMPH SEED POTATOES.  

Strain test work with certified Triumph seed potatoes from western and central-northern states to determine which state or states, section or sections, produce the best certified Triumph seed potatoes for Louisiana, was the major activity in horticulture.  

NATURE AND SCOPE OF WORK.  

One hundred and ten lots of certified Triumph seed from Nebraska; twenty-five lots from Montana; seventeen lots from North Dakota, Minnesota, South Dakota, Wisconsin and miscellaneous sources, were included in the test plots in this project, and disease readings were made by Dr. Wm. Stuart, of the United States Department of Agriculture, and visiting specialists from most of the states represented. Conditions were very favorable for mosaic expression—the primary object of the test. However, the season in general was very unfavorable on account of the severe drought; in consequence, the yields were very low.

The relative average freedom from the mosaic disease of the one hundred and thirty-five lots from Nebraska and
Montana, 1.5 percent and 3.7 percent respectively, stands out in very significant contrast to the seventeen lots from the other sources that showed an average of 28.5 percent mosaic disease.

This strain test work with certified Triumph seed potatoes is a cooperative project, undertaken between states in studying a mutual problem. Thirteen out-of-state visitors, including federal and state potato specialists, dealers, growers, agricultural editors, as well as a local and state representatives of allied interests, visited these tests during the annual potato tour. Dr. Stuart, Director P. F. Trowbridge, Experiment Station, Fargo, North Dakota; Professor F. M. Harrington, in charge of potato certification, Agricultural College, Bozeman, Montana; Dr. R. W. Goss, University of Nebraska, Lincoln; and Mr. M. E. Luther, of the University of Wisconsin, were among the potato specialists who participated in this study.

**SEED SWEET POTATO IMPROVEMENT WORK.**

Tests with strains of Porto Rican sweet potatoes have been inaugurated to determine whether there are any superior ones within the variety; also work in testing the value of "slips" versus cuttings, and in comparing various methods of planting cuttings, has been started.

The greenhouse at the old University site was dismantled for removal to the new site.

**DEPARTMENT OF PLANT PATHOLOGY.**

C. W. EDGERTON, Plant Pathologist.
E. C. TIMS, Assistant Pathologist.
E. V. ABBOTT, Assistant Pathologist.

During the year 1925 the work in the Department of Plant Pathology followed rather closely that of the preceding year. Most of the time was devoted to a few projects, though as usual, some attention was paid to the general disease conditions over the State and to less urgent problems. The projects receiving the most attention were those on sugar cane diseases, tomato wilt, and the soil flora.
The project on corn root rots was completed and the results published in Louisiana Bulletin No. 193.

**SUGAR CANE DISEASES.**

Sugar cane did not suffer as severely from diseases as was the case in 1924, but a close check was kept on the disease situation. All members of the staff spent most of their time during the summer and fall on the cane disease problems. A careful record was kept of the development of the cane in the test fields over the State. A series of meetings was held at the Cane Experiment Station, at which demonstrations were made showing the value of seed selection.

The work of selecting strains tolerant to mosaic, which had been in progress since 1920, was continued. The selected strains of D-74 and Louisiana Purple, which had been carried through four years, continued to show a high degree of tolerance to the disease. There was enough seed to plant more than an acre each of D-74 and Purple in the fall of 1925. The work of selecting cane resistant to mosaic was continued in the test fields established over the state.

Because of the fact that 1925 was a much more favorable year for the growth of the cane, the root rot trouble was not nearly as serious as it was in 1924. The work of culturing diseased cane roots from various parts of the State was continued throughout the year. Species of Rhizoctonia and Pythium in addition to Marasmius were found to be constantly associated with decayed and decaying roots. Experiments were continued in the laboratory and field to determine the importance of these organisms in bringing about the root rot disease. A series of seed treatment tests in which a wide variety of compounds was used, was started in the field at Baton Rouge. In addition to the other chemical compounds, cyanamid was tried in a series of tests to determine whether it may have some fungicidal value in addition to its fertilizing qualities. Seed treatment work was continued at the test fields over the State.
TOMATO WILT.

The tomato wilt project was confined to the growing of stock seed of the wilt resistant selections which have been developed at this Station and used by the tomato growers of the State for several years. These strains continue to give good results wherever they are used.

SOIL FLORA STUDIES.

A study of the soil flora, including both bacteria and fungi, was started as a new project under the Purnell Fund. Work was actively begun on August 1. The numbers and kinds of organisms in the different soils and at different seasons will be determined. The effect of these organisms on nitrogen fixations, and other soil problems will be ascertained.

CHANGES IN THE STAFF.

Dr. E. V. Abbott was appointed Assistant Pathologist July 1, 1925.

PUBLICATIONS DURING 1925.


SUGAR EXPERIMENT STATION.

W. G. TAGGART, Assistant Director.

D. J. DeARENSBOURG, Field Overseer.

The field work of the Sugar Station is now occupying nearly one hundred and fifty acres of land. The following subjects are the more important ones embraced in our many projects:

1. ROTATIONS, FERTILIZER PLOTS, ETC.

Eighty plots are devoted to rotation systems of three year cropping systems of three-year cropping, with cane two years and other crops one year, and four year cropping with cane two years and other crops two.
As every crop is provided for every year, the individual experiments are multiplied by three in the three-year rotation, and by four in the four-year rotation. The variables are in applications of commercial fertilizers, use and disposition of legume crop, disposition of cane trash, etc. Data on yields, resistance to disease and drouth, etc., are recorded and from now on sugar content of cane juice will be a part of our records.

2. SEEDLING CANES.

We are stressing the variety work. Under our new agreement with the Office of Sugar Plant Investigations, U. S. Department of Agriculture, we are paying $1,000 a year for labor at Canal Point, Florida, for assisting in caring for new seedlings secured there by the plant breeders of the Department of Agriculture, and cuttings of all new seedlings are to be sent to us at Baton Rouge at the same time that they are sent to the Government Station at Houma, La. It will be recalled that our importation of new varieties and our work of germinating seeds for securing new seedlings at the Sugar Station was interrupted when the Federal Horticultural Board passed such stringent regulations on importations as to make it impossible to have canes or cane seeds survive the quarantine treatment.

In response to the appeals of the Director of the Experiment Stations, and our representatives in Congress, that same provision be made for continuing the seedling work, the United States Department of Agriculture agreed to import cuttings of promising canes from other countries, grow them in green houses at Washington, D. C., for a year and then send them to us, if they were known to be free from disease and insect pests. Also to import seeds, germinate them and keep them under observation until it was determined that they conveyed no foreign disease or pest, and then send them to us for trial in Louisiana. Afterwards it seemed best that new canes should be grown at some point outside of the commercial growing area, for further observance for a year or more before bringing them to Louisiana. Provision was made for this work at Canal Point, Florida. Seed breeding could also be carried on at
Canal Point. In the course of time we began to receive cuttings of new canes from the United States Department of Agriculture. In 1924 the Department established its own Sugar Experiment Station, at Houma, La.

While the cooperative relationship of the Office of Sugar Plant Investigations and the Louisiana Sugar Experiment Stations were not as clearly defined as they should have been, prior to 1925, we believe that a satisfactory basis of cooperation has been agreed upon, in which the Office of Sugar Plant Investigations, the Sugar Experiment Station and the American Sugar Cane League are cooperating organizations for testing new canes, and making initial distributions of new meritorious varieties.

We received from the Department last year, 568 new seedlings for trial here. As is usual with new seedlings, most of them were low in sucrose but a few have shown fair sugar content and immunity from mosaic.

A few of the varieties that have been showing good growth and fair sugar content for two or more years, have been planted to the full extent of our available seed cane. One of the older U. S. Seedlings was still green, growing up to December 14th, 1925, with nine percent sucrose, although we had freezing temperature several times prior to that date.

**MISCELLANEOUS EXPERIMENTS.**

Besides the major projects on sugar cane, we have a goodly number of experiments on other things. Varieties of soy beans, methods of planting corn and soy beans, combinations of soybeans and cowpeas, have been under experimentation, affording lessons that have been of much interest to visitors and that will afford valuable data for publication later. Experiments on the disposition of cane trash, have been continued.

Fertilizer experiments included tests of new products, such as Leuna saltpeter, Nitrarnpo, and methods of applying cyanamid, sulphate of ammonia, etc.
SUGAR CANE TEST FIELDS.
D. N. BARROW.

In the spring of 1925, it was decided to establish six sugar cane test fields throughout the sugar district, for the purpose of demonstrating work that had already been tested at the Sugar Experiment Station, and of finding out its applicability under actual field conditions. The location of these stations was determined, after conference with the American Sugar Cane League, as follows:

Sugar Cane Test Field No. 1. At Glenwood Plantation, Glenwood Sugars Cooperating.
No. 2. At Raceland, Godchaux Sugars Cooperating.
No. 3. At Reserve, Godchaux Sugars Cooperating.
No. 4. At Sterling Plantation, Sterling Sugars Cooperating.
No. 5. At Youngsville, Youngsville Mfg. Co., Cooperating.
No. 6. At Angola, La. State Penitentiary Board, Cooperating.

The following work was planned for these stations:
1. The testing of new varieties of cane, secured through cooperation with the Office of Sugar Plant Investigations, United States Department of Agriculture.
2. The selection of native canes (the standard varieties) for disease resistance.
3. The treatment of seed cane for the control of disease.
4. The value of a three-year rotation on soil fertility.
5. The value of a four-year rotation on soil fertility.
6. The value of melilotus indica on soil fertility.

It was late in the season when this work was started and so it was not possible to inaugurate all of the work planned on all six stations. At Sterling, Angola, and
Youngsville, only the test of varieties was inaugurated, while this, in addition to seed selection and cane treatment, was established at Glenwood, Raceland, and Reserve.

A tentative start was also made at these last stations, and at Sterling to establish the work in rotation of crops, both as regards the three and the four-year rotation.

The plantings of varieties were made in the fall of 1924. Unfortunately, weather conditions were so unfavorable at Sterling and Youngsville, that the planting of the varieties of cane was unavoidably delayed until the seed was caught by a freeze. As a consequence, poor stands were obtained at both these stations, while good stands were obtained at the other points. In order to compensate for the defective stand at Youngsville, small quantities of a number of varieties were obtained from the United States Government station, at Canal Point, Florida, and planted in the spring.

The work with these varieties consisted in supervising their proper culture, making notes upon their growth at various periods and sampling and having those samples analyzed in the fall. The sampling was done at two different periods, once just before a freeze and once after the freeze had killed the cane. After growth had ceased from cold, such of these varieties as showed merit, were replanted upon these test stations.

The work with seed selection consisted in selecting from the growing canes during the fall, such stools as showed by their growth and general appearance that they had acquired an apparent immunity or resistance to mosaic disease. These stools were carefully cut and planted.

From April 1st until August, monthly counts were made of the number of stalks growing. This count included not only the original sprouts from the eyes, but later on, all suckers that appeared. The work of treatment of seed cane consisted of soaking the seed in various solutions for the control of root rot. The cane so treated was then planted, and monthly counts kept as with the selected cane.

It was intended to also secure weights of each of these plats at the time of cutting for harvest but from the middle of August until the freezing weather finally put a stop to
their growth, they were so severely attacked by borers that all results from weights were completely vitiated and such work was not done. The same pest so completely destroyed the other cane in the fields that the results upon the tentative rotation work were not deemed reliable, and so weights upon this work were not kept.

**SUGAR BEET WORK.**

In September, the Station embarked in an extensive campaign for the testing of the possibilities of growing sugar beets in the sugar district of Louisiana. It was decided to build a small beet sugar plant at the University and to grow about a hundred acres of beets, distributed in five acre lots all over the sugar district, for the manufacture of sugar at this central plant. The grower of the beets stands all of the expense of the work of planting, cultivating, and harvesting the crop, while the Station is to pay transportation on the beets and manufacture them into sugar.

It was late before plans could be perfected and it was the 10th of November before planting could be done. Twenty sugar planters volunteered to plant areas of about five acres each for this experiment.

The Experiment Stations purchased two regular Planet Jr. sugar beet planters, and these were taken from field to field, in so far as was practicable and the planting done with them, under the supervision of Mr. Barrow. Progress in planting, therefore, was necessarily slow, but by the 10th of December about sixty acres were thus planted. Other planters did their own planting.

The fall plantings were followed by extremely heavy rains and as a consequence, many of the plantings were entirely destroyed. Partial stands were obtained, however, by J. W. Supple, R. G. Malhiot, the Penitentiary Farm at St. Gabriel and the Penitentiary Farm at Angola, and H. N. Sherburn.

While the work on the whole, during the past year has, for reasons that could not be controlled, proved rather unsatisfactory, yet, it has not been without value. The whole
subject of test stations was new and there was no precedent to follow; so much has been learned as to how best to do such work. It is apparent that much closer supervision than was possible under the conditions that prevailed last year, must be given to the work, and that the work must be better systematized. To accomplish this, one man should devote his whole time to the project. Again, all work to be done upon these stations should be done with the knowledge, and under the supervision of the man in charge of same, and all reports of such work should be made to him.

**SUGAR ENGINEERING.**  
**J. J. MUNSON.**

We have undertaken two projects under the Purnell Fund, in Sugar House work. The first project is devoted to experiments in the manufacture of cane syrup and the second to experiments in recovering sugar from Louisiana sugar beets.

An open pan of special pattern, devised by Mr. Munson, has been installed for syrup making and good progress has been made toward the installation of the necessary equipment for manufacturing sugar from sugar beets. The Building Committee of the University appropriated $25,000 for the installation of machinery for experiments with sugar beets. The plantation will be in readiness for operation about the middle of May, 1926.

Thirty sugar planters in different portions of the State, are cooperating with the Experiment Stations by growing from one to four acres each of sugar beets, to be shipped to Baton Rouge for manufacture.

From previous experiments extending over a number of years, we have a fairly good reason to believe that beets can be grown, of good enough quality, to render their manufacture profitable. Installation of this machinery will enable us to make a commercial test of this possibility.
EXPERIMENT STATION LABORATORY.
(Fertilizer and Feed Control Work.)

A. P. KERR, Chief Chemist.
JESSE L. FARR, Asst. Chemist.
W. P. DENSON, Asst. Chemist.
C. C. MORELAND, Asst. Chemist.
OTIS BROUSSARD, Student Assistant.

The Experiment Station laboratory has made all analyses of feed and fertilizer, in control work for the State Department of Agriculture. Analyses of insecticides have also been made. This work comes under Act 233 of 1924, which delegates the same power to the State Department of Agriculture as does the Fertilizer and Feed Stuffs law. One of the beneficial effects of the Insecticide law is to keep out so many insecticides that have not passed through the proper experimental stage.

The laboratory is called upon from time to time to make soil analyses for farmers of the State. As there are so many outside factors that have to be taken into consideration, an analysis of soil without any other information, means very little, either to the farmer or to the Experiment Station.

The laboratory is crowded all the time with miscellaneous work, poison cases, etc. Although our time is very limited, we have always managed to take care of this kind of work.

On December 15, 1925, we moved to the new quarters on the old campus, which has very much facilitated our work.

NORTH LOUISIANA EXPERIMENT STATION,
CALHOUN, LA.

SIDNEY STEWART, Superintendent.

The work at this station during the past season has consisted of the following projects:
1. Compost vs. Acid Phosphate.
   This project has been carried on continuously since 1889.
2. Cotton Fertilization Tests With and Without Dusting for Weevil Control.

There are two different projects under this head.

3. Velvet Bean Variety Test.
4. Soy Bean Variety Test.
5. Corn Variety Test.
7. Forage Crops.
8. Three-Year Rotation Demonstration.

This work includes forty-seven acres, divided into three areas, named 1, 2, and 3, respectively.

More soy beans were planted this year than usual and some lots where the soil was good yielded about one ton per acre of cured hay, the Biloxi proving the heavier yielder. With a good season at the right time, the yield would have been considerably more. Biloxi soy beans, between 6 foot corn rows, yielded better than eight bushels of seed per acre.

In trying to put to use some of the organic matter from Kudzu vines, the plot on which there is a heavy growth of this plant was turned under during last winter and planted in corn, after receiving an application of 200 pounds of acid phosphate per acre. Due to the lack of moisture necessary to decay the vegetation properly, the yield of corn was unsatisfactory, being about 20 bushels per acre.

The total amount of cotton produced this season, was 21,503 pounds, from which 15 bales of cotton, averaging 516 pounds per bale were ginned. This was produced on 18½ acres. Due to the scarcity of extra labor to help pick the cotton, the fall rains caught a considerable amount of it in the fields, and as a result, more than a bale of cotton was lost.

The corn yield for the place averaged about 23 bushels per acre, the total amount harvested being 72,024 pounds.

Several tons of soy bean, cowpea, sorghum and Bermuda grass hay are baled and stored for future use, in which respect the Station is better prepared than last season.
Due to the drouth of 1924, feed for the stock was scarce, and a considerable amount of mixed feeds had to be bought. In order to reduce this expense as much as possible, a plot of Early Amber and Orange sorghum was planted, which furnished an abundance of feed, upon which the work stock thrived, even while at hard work.

The yield from each variety of sorghum per acre, is as follows:

<table>
<thead>
<tr>
<th>Variety</th>
<th>First Cutting</th>
<th>Second Cutting</th>
<th>Third Cutting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Amber</td>
<td>8 Tons per A.</td>
<td>5 Tons per A.</td>
<td>2 Tons per A.</td>
</tr>
<tr>
<td>Orange</td>
<td>9 Tons per A.</td>
<td>7 Tons per A.</td>
<td>2½ Tons per A.</td>
</tr>
</tbody>
</table>

The last cutting was shocked green, on cross-arms on upright poles in the plot, and cured. It has furnished good forage for the stock, which are allowed to graze it at will during the winter.

The meetings of the North Louisiana Agricultural Society have been held regularly each month during the summer, for which, programs of general interest have been arranged. The meetings were usually well attended.

The North Louisiana Agricultural Fair was held on the Experiment Station grounds, October 20-23. Professor G. S. Manning, Principal of the Calhoun High School, was elected Secretary, in which capacity he, assisted by Mrs. Sidney Stewart and others, arranged and held a very creditable fair. What was formerly used as a dining hall was converted into a poultry building, which proved satisfactory.

A new one-ton Ford truck was bought during September, 1925.

The livestock (mules and horses) consists of four mules, ranging in ages from 9 years to 16 years of age; two mule colts, 1 six months old, the other 2½ years old; one mare, the mother of the colts, and 1 saddle mare. The mule colts are well developed and the older one will be put in on regular work this year.

The pecan crop was very poor this year. Only a few varieties put on and held a normal amount of nuts, and they were of poor quality, being immature and shrivelled. The "Texas Prolific", however, bore the only crop of big, well filled nuts within its history, at this station.Ordinarily it has nothing, or a light crop of small nuts. Other va-
Varieties bearing this year are as follows: Moneymaker, Senator, Delmas, Nelson, Success, and Stuart. All had an ordinary crop of poorly filled nuts. The Schley, Pabst, Van Deman, Carmen, President, Centennial, Columbia, and Jerome had practically nothing. The Teche, Curtis, and Bradley had nothing at all.

The vacancies in the pecan orchard and in the orchard set out in 1922, were filled last winter, but some of them died during the summer and two were killed by gophers. These spaces are to be filled soon.

**THREE YEAR COMPOST ROTATION EXPERIMENT**

**Plots A, B, C, Experiment Field**

In this experiment, one-third of the area is planted to cotton, one-third to corn and cowpeas, and one-third to oats, followed by cowpeas.

During the period between 1889 and 1908, the east half of each plot received an application of compost, at the rate of 30 bushels per acre. Since 1908 the compost has been applied to the south half of each plot; therefore, one-fourth of each plot has received compost annually since 1889, one-fourth has received compost annually since 1908, and one-fourth received it annually until 1908, while the remaining fourth has never had compost at any time. This compost is made up of green cotton seed, stable manure, and acid phosphate.

Results for 1925 on these plots are as follows:

<table>
<thead>
<tr>
<th>Plot</th>
<th>Cotton (lbs. per acre)</th>
<th>Corn (Bu. per acre)</th>
<th>Oats (tons per acre)</th>
<th>Cowpeas (tons per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>667.90</td>
<td>9.16</td>
<td>.386</td>
<td>.480</td>
</tr>
<tr>
<td>B</td>
<td>596.88</td>
<td>8.09</td>
<td>.233</td>
<td>.391</td>
</tr>
<tr>
<td>C</td>
<td>476.92</td>
<td>6.86</td>
<td>.333</td>
<td>.430</td>
</tr>
</tbody>
</table>
COTTON FERTILIZER EXPERIMENTS, WITH AND WITHOUT DUSTING, FOR WEEVIL CONTROL.
Plot 1. Experiment Field.

Fertilization Scheme:

Comparison of acid phosphate alone, at the rate of 200 lbs. per acre; nitrate of soda alone, 200 lbs. per acre; sulfate of ammonia, alone 150 lbs. per acre, and a combination of each, as follows:—Phosphate and nitrate of soda, phosphate and sulfate of ammonia, also usual home mixed formula (cotton seed meal and acid phosphate).

Each plot consists of four rows, and replicated four times across the plot.

<table>
<thead>
<tr>
<th>Plot</th>
<th>Fertilization Scheme</th>
<th>Yield</th>
<th>Pounds per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unfertilized (Check)</td>
<td>37.75</td>
<td>1117.50</td>
<td></td>
</tr>
<tr>
<td>2. Acid Phosphate, 200 lbs. per acre</td>
<td>37.81</td>
<td>1134.50</td>
<td></td>
</tr>
<tr>
<td>3. Nitrate of Soda, 200 lbs. per acre</td>
<td>37.88</td>
<td>1136.40</td>
<td></td>
</tr>
<tr>
<td>4. Sulfate of Ammonia, 150 lbs. per acre</td>
<td>38</td>
<td>1140</td>
<td></td>
</tr>
<tr>
<td>5. Acid Phosphate, 200 lbs., nitrate soda 200 lbs.</td>
<td>38.75</td>
<td>1162.50</td>
<td></td>
</tr>
<tr>
<td>6. Acid Phosphate, 200 lbs., sulfate of ammonia, 150 lbs.</td>
<td>39.94</td>
<td>1198.20</td>
<td></td>
</tr>
<tr>
<td>7. Acid Phosphate, 200 lbs., nitrate of soda, 300 lbs.</td>
<td>40.38</td>
<td>1211.40</td>
<td></td>
</tr>
<tr>
<td>8. Acid Phosphate 200 lbs., sulfate of ammonia, 250 lbs.</td>
<td>44.19</td>
<td>1325.70</td>
<td></td>
</tr>
<tr>
<td>10. Acid Phosphate 200 lbs. C. S. Meal 400</td>
<td>41.81</td>
<td>1329.80</td>
<td></td>
</tr>
</tbody>
</table>

The plan was to leave the series at each end undusted, the remainder or the two central series, dusted by regular schedule for weevil control. Due to low percentage of infestation, no dusting was done on any part of the plot.

COTTON FERTILIZER EXPERIMENTS, WITH AND WITHOUT DUSTING, FOR WEEVIL CONTROL.
(In cooperation with Dr. W. E. Hinds, Entomologist.)
Plot 2. Experiment Field.

Variety of Seed:—Wanamaker, Cleveland Big Boll, (1½ Bu. per acre).

Fertilization Scheme:

Acid phosphate and nitrate of soda, ratio 2 to 1, in amounts of 300, 600, and 900 pounds per acre on plots as shown below, without potash. Balance repeated as above with addition of potash, (muriate) at rate of 25, 50 and 75 pounds per acre. Where amount of nitrate of soda is
greater than 200 lbs., one-half was applied ahead of planting, in drill, balance applied ahead of first sweeping after chopping.

**Weevil Control:**

By regular dusting, after 10% infestation, applied to central portion entire area, leaving end fourths as undusted checks.

Check on fertilization: Four outside rows on each side of plot, extending full length of field.

Plots consist of 8 in number, of four rows each, 36 inches apart.

Plot 1. Unfertilized (Check) .................................................. 1266.30
2. Acid phosphate 200 lbs., nitrate of soda, 100 lbs. per acre. 1317.28
3. Acid phosphate 400 lbs., nitrate of soda, 200 lbs. per acre. 1336.30
4. Acid phosphate 600 lbs., nitrate of soda, 300 lbs. per acre. 1406.30
5. Acid phosphate 200 lbs., nitrate of soda, 100 lbs. per acre. Potash 25 lbs. per acre................................. 1336.30
6. Acid phosphate, 400 lbs; Nitrate Soda, 200 lbs., Potash, 50 lbs. per acre ............................................ 1343.30
7. Acid phosphate, 600 lbs; Nitrate of soda, 300 lbs., Potash 75 lbs. per acre ............................................ 1456.26
8. Unfertilized (Check) .................................................. 1323.63

**VELVET BEAN VARIETIES IN CORN.**

Plots 4 and 5. Experiment Field.

The corn on this plot was planted March 31st. Yielded at rate of 20.73 bushels per acre.

Beans, as shown below, were all planted between corn rows, six feet apart, April 16th.

No. Variety Source of Seed. Yield per Acre, Bu.
1. Osceola—Everett Seed Co., Atlanta, Ga........................ 11.
2. 90 Day—Everett Seed Co., Atlanta, Ga....................... 13.
3. Osceola—T. W. Wood & Son, Richmond, Va.................. 8.54
5. Extra Early—H. G. Hastings, Atlanta, Ga.................... 18.32

Most of the above varieties were later maturing than usual, due to abnormal dry weather during growing period, and were injured by frost.
### CORN VARIETY TESTS.
#### Plot 6. Experiment Field.

<table>
<thead>
<tr>
<th>No. Variety</th>
<th>Source of Seed</th>
<th>Yield per Acre, Bu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sucerroper—Ferguson Seed Farm, Sherman, Tex.</td>
<td>26.10</td>
<td></td>
</tr>
<tr>
<td>2. Yellow Dent—Ferguson Seed Farm, Sherman, Tex.</td>
<td>27.45</td>
<td></td>
</tr>
<tr>
<td>3. Chisholm—Ferguson Seed Farm, Sherman, Tex.</td>
<td>26.40</td>
<td></td>
</tr>
<tr>
<td>4. Calhoun Red Cob—I. L. Haile, Linville, La.</td>
<td>21.30</td>
<td></td>
</tr>
<tr>
<td>5. Big Ear Prolific—Dr. L. C. Allen, Hosston, La.</td>
<td>21.00</td>
<td></td>
</tr>
<tr>
<td>7. Imperial White Dent—Raceland Co., Raceland, La.</td>
<td>9.45</td>
<td></td>
</tr>
<tr>
<td>8. Neal's Paymaster—W. H. Neal, Lebanon, Tenn.</td>
<td>25.50</td>
<td></td>
</tr>
<tr>
<td>9. Rogers—D. H. Wallace, Verda, La.</td>
<td>18.60</td>
<td></td>
</tr>
<tr>
<td>10. Whatley's Prolific—Whatley Bros., Helena, Ga.</td>
<td>21.15</td>
<td></td>
</tr>
<tr>
<td>13. Yellow Calhoun, State Experiment Station, Baton Rouge</td>
<td>19.05</td>
<td></td>
</tr>
<tr>
<td>14. White Calhoun, State Experiment Station, Baton Rouge</td>
<td>22.50</td>
<td></td>
</tr>
<tr>
<td>15. Red Calhoun Cob—State Exp. Station, Baton Rouge</td>
<td>21.90</td>
<td></td>
</tr>
<tr>
<td>16. Calhoun Red Cob, N. La. Experiment Station, Calhoun</td>
<td>24.00</td>
<td></td>
</tr>
</tbody>
</table>

All of the above varieties were planted March 31st, after applying 200 pounds of acid phosphate and 50 pounds of nitrate of soda in drill; was given clean, shallow cultivation until beginning to tassel. Nitrate of soda was applied May 25th, when corn was about average shoulder high; 75 pounds of nitrate of soda was used per acre.

Damage by worms and weevils not here considered.

### COTTON VARIETY TESTS.
#### Plot 7. Experiment Field.

<table>
<thead>
<tr>
<th>No. Variety</th>
<th>Source of Seed</th>
<th>Bolls Lint</th>
<th>Lbs. Per A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cook 588—T. J. Whatley, Opelika, Ala.</td>
<td>70</td>
<td>35.51</td>
<td>894.90</td>
</tr>
<tr>
<td>2. Salsbury—Delta &amp; Pine Land Co., Scott, Miss.</td>
<td>78</td>
<td>30.70</td>
<td>780.00</td>
</tr>
<tr>
<td>3. D. P. L. No. 4—Delta &amp; Pine Land Co., Scott, Miss.</td>
<td>74</td>
<td>27.44</td>
<td>812.40</td>
</tr>
<tr>
<td>4. D. P. L. No. 5—Delta &amp; Pine Land Co., Scott, Miss.</td>
<td>69</td>
<td>31.58</td>
<td>717.60</td>
</tr>
<tr>
<td>6. Coker's Delta Webber 4—Pedigreed Seed Co., Hartsville, S. C.</td>
<td>64</td>
<td>26.77</td>
<td>732.60</td>
</tr>
<tr>
<td>7. Coker's Webber 49-101-3-3—Pedigreed Seed Co., Hartsville, S. C.</td>
<td>79</td>
<td>32.46</td>
<td>729.80</td>
</tr>
<tr>
<td>8. Coker's Clev. 1a3-13-3-9—Pedigreed Seed Co., Hartsville, S. C.</td>
<td>67</td>
<td>35.00</td>
<td>845.10</td>
</tr>
<tr>
<td>9. Ped-Cleveland No. 3—Pedigreed Ped. Seed Co., Commerce, Ga.</td>
<td>70</td>
<td>33.76</td>
<td>815.10</td>
</tr>
<tr>
<td>10. Coker's Htsville 20—Pedigreed Seed Co., Hartsville, S. C.</td>
<td>64</td>
<td>27.54</td>
<td>785.10</td>
</tr>
<tr>
<td>11. Wanamaker Big Boll—W. W. Wanamaker, Jr., St. Matthews, S. C.</td>
<td>75</td>
<td>38.41</td>
<td>755.10</td>
</tr>
<tr>
<td>12. Cook 588—R. E. Hudson, Auburn, Ala.</td>
<td>72</td>
<td>35.66</td>
<td>810.00</td>
</tr>
<tr>
<td>13. Covington-Toole Wilt Resistant—W. F. Covington, Headland, Ala.</td>
<td>71</td>
<td>33.13</td>
<td>825.00</td>
</tr>
</tbody>
</table>
14. Half & Half No. 92—Dr. C. C. Craighead, Athens, La. .......................... 64 42.59 792.60
15. Half & Half No. 27—Dr. C. C. Craighead, Athens, La. .......................... 71 43.62 879.90
17. College No. 1—State College Agr. Athens, Ga. ............................... 73 33.86 815.10
20. Louisiana No. 1—State Exp. Sta., Baton Rouge, La. .......................... 84 28.09 695.10

All of the above varieties were planted April 17th, after applying 200 pounds of acid phosphate and 100 pounds of nitrate of soda in drill. Frequent cultivations were given until June 27th. All of the cotton was bunched instead of the usual thinning to one stalk. An application was given, as a side dressing, May 28th, after chopping and ahead of sweeping. Cotton picked October 5-6.

Length and quality of lint must be considered in estimating money value per acre.

**DEMONSTRATION 3-YEAR ROTATION.**

**Area No. 1.**

Previous crop: Cotton.

Present crop: Corn and Velvet beans.

**Object:** Comparison of yields per acre, following three year rotation of corn and velvet beans, corn and cowpeas or soy beans, and cotton, and the actual cost per acre of producing each crop.

<table>
<thead>
<tr>
<th>Cost of Producing Crop</th>
<th>Total</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuilding terraces, preparation of soil and planting</td>
<td>$80.38</td>
<td>$5.02</td>
</tr>
<tr>
<td>Fertilizer, Acid phosphate, $25.20, nitrate soda, $40.50</td>
<td>65.70</td>
<td>4.11</td>
</tr>
<tr>
<td>Seed, Corn, $11.00; Beans, $24.00</td>
<td>35.00</td>
<td>2.19</td>
</tr>
<tr>
<td>Cultivation and harvesting</td>
<td>128.88</td>
<td>8.06</td>
</tr>
<tr>
<td><strong>Total cost of producing crop</strong></td>
<td><strong>$309.96</strong></td>
<td><strong>$19.38</strong></td>
</tr>
</tbody>
</table>

| Corn harvested December 4-8, bushels | 377.33 | 21.08 |
| Value of crop, @ $1.25 per bushel (corn) | **$471.66** | **$29.48** |
| **Less cost of producing crop** | **309.96** | **19.38** |
| **Balance** | **$161.70** | **$10.10** |

Every third row was planted to velvet beans, which made pretty fair growth, but due to adverse weather con-
ditions, the seed pods were shed badly, and those adhering were rotted by excessive rains during the fall, so the bean yield is not figured in.

DEMONSTRATION 3-YEAR ROTATION.
Area No. 2. (13 acres.)

Previous crop: Corn.
Present crop: Cotton.

<table>
<thead>
<tr>
<th>Cost of Producing Crop</th>
<th>Total</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuilding terraces, preparation of soil and planting</td>
<td>$63.18</td>
<td>$4.86</td>
</tr>
<tr>
<td>Fertilizer, Acid phosphate, 2,600 lbs. (200 lbs. per Acre)</td>
<td>40.80</td>
<td>3.14</td>
</tr>
<tr>
<td>Nitrate of Soda, 3,042 lbs. (234 lbs. per acre)</td>
<td>82.13</td>
<td>6.32</td>
</tr>
<tr>
<td>Seed, 900 lbs. @ $3.00 per 100 lbs.</td>
<td>27.00</td>
<td>2.08</td>
</tr>
<tr>
<td>Cultivation of crop</td>
<td>136.01</td>
<td>10.46</td>
</tr>
<tr>
<td>Harvesting 15,511 lbs. @ $1.00 per hundred</td>
<td>153.11</td>
<td>11.77</td>
</tr>
<tr>
<td>Ginning, bagging and ties, approximately 10 bales.</td>
<td>70.00</td>
<td>5.39</td>
</tr>
</tbody>
</table>

Total cost of producing crop | $572.23 | $44.02 |
Value of 5,492 lbs. line @ 18c per lb. | $972.36 |
Value of 9,999 lbs. seed @ $30.00 per ton | 148.63 |

Total value of crop | $1,120.99 |
Less cost of production | 572.23 |
Balance | $548.76 Per Acre | $42.21 |

The above cotton was planted April 10-11, on bed; 200 lbs. of acid phosphate was applied and bedded on March 4-6. Bed opened, and 100 lbs. of nitrate of soda applied ahead of planting. Wanamaker-Cleveland Big Boll was variety of cotton used, at rate of 11/2 bushels per acre.

After chopping an additional 100 lbs. of nitrate of soda per acre was applied, as a side dressing. Frequent cultivations were given until June 27th. First cotton picked August 19th.

DEMONSTRATION 3-YEAR ROTATION.
Area No. 3. (8 acres.)

Object: Same as areas 1 and 2.

<table>
<thead>
<tr>
<th>Cost of Producing Crop</th>
<th>Total</th>
<th>Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuilding terraces, preparation of soil and planting</td>
<td>$22.13</td>
<td>$2.77</td>
</tr>
<tr>
<td>Fertilizer: Acid Phosphate, $14.40; Nitrate Soda, $12.88</td>
<td>27.28</td>
<td>3.41</td>
</tr>
<tr>
<td>Seed: Corn, $7.00; Peas, $16.00</td>
<td>23.00</td>
<td>2.88</td>
</tr>
<tr>
<td>Cultivation of crop</td>
<td>31.25</td>
<td>3.91</td>
</tr>
<tr>
<td>Harvesting corn, 153.69 bushels; 19.21 bu. per acre</td>
<td>17.25</td>
<td>2.16</td>
</tr>
</tbody>
</table>

Total cost of production and harvest | $120.91 | $15.13 |
Value of corn crop: 153.69 bu. @ $1.25..............$192.11  $24.01
Less expense of production and harvesting........ 120.91  15.13

Balance on corn crop .......................$ 71.20 $ 8.88

Cowpeas were planted in drills in corn middles, June 1st, and a good stand secured. An average crop of peas matured but were all ruined by the continued rains in the fall, before they could be harvested.

DEMONSTRATION 3-YEAR ROTATION.

Previous crop: Corn. Present crop: Corn, Soy Beans, and Cowpeas.

Cost of Producing Crop. Total Per Acre
Rebuilding terraces, preparation of soil and planting.$ 52.50 $ 5.25
Fertilizer: Acid Phosphate, $18.00; Nitrate Soda, $17.00 35.00 3.50
Seed: Corn, $6.00; Beans, $15.00; Peas, $4.50 25.50 2.55
Cultivation 50.50 5.05
Harvesting corn, 123.2 bu., 12.32 bu. per acre 21.30 2.13
Harvesting beans, 4,000 lbs. @ 80c 32.00 3.20

Total cost of producing and harvest.............$216.80 $21.68
Value of corn: 123.2 bu. @ $1.25...................$154.00 $15.40
Value of soy beans, approximately 40 bu. @ $3.00 bu. 120.00 12.00

Total cost of production and harvest.............$216.80 $21.68
Less cost of production, etc. ..................216.80 21.68

Balance ......................................$ 57.20 $ 5.72

Approximately one-half of the field was planted in corn, in rows six feet wide, with a row of Biloxi soy beans between corn rows, planted at the same time as the corn, March 30th. One-third of the balance of the area was in peas in the drill with the corn at first sweeping; the other two-thirds of the balance was planted in the same way with Mammoth Yellow soy beans. The peas made a good yield but were ruined by rains. The Mammoth Yellow soy beans produced about 3 bushels per acre. The Biloxi soy beans of March 30th, planting produced at the rate of 8.05 bushels per acre, and were injured very little by the rains that ruined the peas.
WEATHER REPORT.
(1925)
North Louisiana Experiment Station.

<table>
<thead>
<tr>
<th>Month</th>
<th>Max. Temp.</th>
<th>Min. Temp.</th>
<th>No. Days Rain</th>
<th>Inches Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>72</td>
<td>21</td>
<td>11</td>
<td>8.06</td>
</tr>
<tr>
<td>February</td>
<td>82</td>
<td>2</td>
<td>1</td>
<td>1.70</td>
</tr>
<tr>
<td>March</td>
<td>84</td>
<td>32</td>
<td>6</td>
<td>4.37</td>
</tr>
<tr>
<td>April</td>
<td>92</td>
<td>42</td>
<td>1</td>
<td>.02</td>
</tr>
<tr>
<td>May</td>
<td>96</td>
<td>38</td>
<td>4</td>
<td>1.90</td>
</tr>
<tr>
<td>June</td>
<td>104</td>
<td>64</td>
<td>3</td>
<td>3.43</td>
</tr>
<tr>
<td>July</td>
<td>104</td>
<td>64</td>
<td>4</td>
<td>5.03</td>
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<tr>
<td>August</td>
<td>102</td>
<td>62</td>
<td>1</td>
<td>.14</td>
</tr>
<tr>
<td>September</td>
<td>108</td>
<td>64</td>
<td>7</td>
<td>5.52</td>
</tr>
<tr>
<td>October</td>
<td>92</td>
<td>33</td>
<td>8</td>
<td>9.02</td>
</tr>
<tr>
<td>November</td>
<td>78</td>
<td>31</td>
<td>10</td>
<td>12.66</td>
</tr>
<tr>
<td>December</td>
<td>76</td>
<td>15</td>
<td>6</td>
<td>2.76</td>
</tr>
</tbody>
</table>

Total rainfall for year......54.61

RICE EXPERIMENT STATION.
Crowley, La.

J. MITCHELL JENKINS, Superintendent of the Station and Assistant Agronomist, Office of Cereal Investigation, Bureau of Plant Industry, United States Department of Agriculture.

METEOROLOGICAL OBSERVATIONS.

The excessively dry weather referred to in the report of this Station for the year 1924, continued, with few interruptions, until the latter part of August, 1925. The precipitation was normal for the months of January, March, and June, and was far below normal for the months of February, April, May, July, and the first three weeks of August. During September and October the rainfall was excessively high, while for the last two months it was decidedly below the average.

The annual precipitation amounted to 49.86 inches, which is 5.41 inches less than the average annual for the past sixteen years. The average mean temperature for the first five months was 69°F., or 9°F greater than for the same period last year, while the average mean for the remaining seven months was 74°F, or only a fraction of a degree greater than for the same period last year.

During January and February the temperature did not go below 30°F. The lowest temperature during the year
occurred December 28th, with a reading of 21°F. Only once during the summer did the temperature reach 100°F; this was on August 20th.

THE EFFECT OF THE WEATHER ON LIVESTOCK

Relatively mild weather during January and February was of great value to livestock, especially to cattle. The temperature was such as not to produce much discomfort and this, with the rains, caused a decided growth of grass in protected areas. There was also better provision made this year by the owner for the care of his animals, than was the case last year.

During the summer it became necessary for many farmers to bore mediumly deep wells to provide water for their stock because of the failure of shallow wells and the excessive amount of salt in the water of the streams.

The problem of feed was not as serious as during the summer and fall of 1924, because of the larger amount of precipitation this year and its more even distribution during the dryer periods.

THE EFFECT OF THE WEATHER ON THE RICE CROP OF SOUTHWEST LOUISIANA.

In spite of the fact that five inches of rain fell during January, tests of water from some streams used for irrigation purposes made the latter part of February, indicated a salt content as high as twenty-four grains per gallon. A very heavy rain of 3.36 inches, March 16th, resulted in no salt being found at these points when tests were made March 24th. The salt content in the water of these streams increased each month thereafter, and by the 25th of May, tests indicated as much as 280 grains per gallon; tests made June 24 indicated as much as 500 grains per gallon; and by the same date in July 670 grains per gallon were found. After a heavy rain of over four inches, August 22, tests made September 30 indicated as much as 665 grains. As late as November 10, after the very heavy rains of September and October, there was still as much as 5 grains noted. There were other streams that received no supply of fresh water until late in the fall. This condition in the irrigation
situation caused much unrest among farmers. However, they went forward with their plowing and seeding operations and as the weather was favorable much of the crop was seeded earlier than usual. Some felt that early planting would be best in case of shortage of water later in the season. In many sections there was not sufficient moisture in the soil to germinate the seed. To overcome this, water was pumped upon the fields to wet the soil and then drained off. This necessitated early pumping from the streams, and the utilization of water at a much earlier date than is usually the case. In some sections the water that was used for this purpose contained sufficient salt to kill the seedlings as fast as germination took place. In some instances land that was flooded last season with water that contained a high salt content, was seeded again this season, to be irrigated with well water. Upon flooding it was found that enough salt had remained in the soil to injure or kill the young plants.

As the season advanced and there was no change, especially during July and August, there was much doubt among farmers and canal owners as to what course to pursue, with the result that some used water containing salt sufficient to kill or seriously injure the crop, while others thinking of the effect on the soil, allowed their crops to suffer on account of the lack of water rather than injure both the crop and the soil with salt water.

Early maturing rices in most cases, had sufficient water to produce normally. However, much of the late maturing portion of the crop suffered partial or total loss. In some instances crops that suffered for water produced nearly normal yields, as the result of heavy rains the last week in August.

Certain canal companies conveyed water long distances to help relieve the situation and most deep wells operated day and night during the entire season in order to irrigate the largest possible acreage.

After producing the crop under such unfavorable conditions, it appeared for awhile in September and October,
that the rainy weather would prevent its harvest; however, this was eventually accomplished with less loss than was at first anticipated. In the end it resulted in high prices and a good profit for some and total failure for many.

RESULTS OF EXPERIMENTAL WORK.

The adverse weather conditions discussed above affected very little, the experimental work of the Station. The good weather during December of last year, permitted the greater part of the plowing operations to take place before the beginning of this year. This allowed long exposure of the soil to the action of the air and frost, resulting in good seedbed preparation, good germination, and, in the main, good results.

The deep well afforded ample water for irrigation purposes, although the level of water went to a point below the pump about the middle of May and did not rise above the pump until the latter part of November. Repairs made on the pump last year are responsible for its successful operation this year.

The same lines of investigation were pursued as have been reported for the past several years.

The yields from rices in the increase plats were, on the whole, greater than from the same varieties last season. The yields from certain new varieties are very satisfactory, and indicate promising early maturing rices. There was a ready sale of all seed of several varieties grown.

The result in the rate of seeding experiments indicate that there is little, if anything, to be gained from the sowing of more than eighty pounds of seed per acre, provided the land is fertile and free from weeds.

Experiments in the manner of seeding indicate that under favorable conditions there is a slight gain in favor of the broadcast method.

The best results in the date of seeding experiments were secured from the April and May seedings, there being very little difference in favor of the latter date. The high temperatures of early spring no doubt account for the similarity in the results.
Results secured from commercial fertilizers give no conclusive evidence that plant food supplied in this form to rice is profitable. In some plats increases are noted, while in check plats cropped continuously to rice for seven years, greater yields are recorded.

In the rotation experiments, there is no doubt as to the advantage derived from the use of the soybean in this connection. Many yields of rice grown in rotation with soybeans are greater by far than anything secured from commercial fertilizers, and in some instances, three times as great as the average production of rice for southwestern Louisiana.

The yield of soybean seed was much greater than last year, due to favorable conditions at seeding time, and to rain at the time of fruiting.

**EXTENSION OF STATION RESULTS.**

Interest in the work of the Station was greatly increased during the year, as indicated by the number of inquiries received and the number of visitors entertained. The main points of interest were centered around the growing of soybeans, the use of commercial fertilizer for rice, and the use of improved seed.

The Extension Division of the University, through its specialist in rice, having his headquarters at this Station, did much during the year to strengthen the recommendations of the Station by conducting demonstrations on farms throughout the rice-growing region and by dissemination of knowledge along other lines.

**ENTOMOLOGICAL WORK.**

The representative of the Bureau of Entomology of the United States Department of Agriculture, located at this Station, continued his investigations pertaining to rice insects, and also devoted much time to a study of the blister beetle that attacks so ravenously the soybean, with the view of working certain phases of its life history and means of control. He was successful in establishing, beyond a doubt, the effectiveness of sodium fluosilicate as a means of destroying this insect. This discovery has given great impetus to the soybean industry as the blister beetle was fast discouraging many from attempting to grow this crop.
PUBLICATIONS.

In October, the Office of Cereal Investigations, Bureau of Plant Industry, United States Department of Agriculture, published, in cooperation with the Louisiana Agricultural Experiment Station, Department Bulletin No. 1356, entitled:

"Experiments in Rice Production in Southwestern Louisiana," by Charles E. Chambliss, Associate Agronomist in Charge of Rice Investigations, Bureau of Plant Industry, and J. Mitchell Jenkins, Superintendent, Rice Experiment Station, Crowley, La., and Assistant Agronomist, Office of Cereal Investigations, Bureau of Plant Industry.

This bulletin discusses natural factors affecting rice production and gives the results of certain lines of investigation at this Station over a period of fourteen years.

MALARIA INVESTIGATIONS.

The unit of the United States Public Health Service, investigating malaria under rice field conditions, discontinued its work here the end of February and removed its headquarters to Greenwood, Mississippi.

The results of the investigations of this unit of the Public Health Service offer an explanation as to the reason for the excellent health that obtains in the rice-growing region of the State. Mosquitoes were found in abundance but during the two years of investigation very few were found infected with the organism that produce malaria.

FRUIT AND TRUCK EXPERIMENT STATION,
HAMMOND, LA.

B. SZYMONIAK, Horticulturist in Charge.

Fertilizer Test For Strawberries.

Thirty-five thousand plants of the Klondike variety were set out during the latter part of November, 1924. The strawberry plants were spaced one foot apart in rows three and a half feet apart. Twenty-one mixtures of fertilizers were used, as in the past two seasons. The amounts of fertilizers were doubled the amount used during the past two seasons. The following table shows the amount and kind of fertilizers applied per acre:
The above table shows that combination No. 5, consisting of 720 pounds of acid phosphate, 16%; 240 pounds of nitrate of soda, 14.8%; and 90 pounds of sulphate of potash, gave the highest yield of marketable fruit—120 crates of 24 pints each. These mixtures were repeated five times. The yields are slightly higher than last year, due to increased amounts of fertilizers used and the building up of the fertility of the land. It will be further noticed that where higher quantities of phosphate fertilizers were used, the yields increased. There were only 25% of culls on rows with higher applications of phosphate, as compared with 50% on the other rows. The fruit was of larger size and firmer texture on the rows with phosphate.

**Strawberry Variety Test.**

Object was to compare and test varieties of strawberries with the Klondike, with reference to yields and maturity. The following varieties were tested: Missionary, Gandy, Aroma, Lady Cornellie, Evening Star, Premier, Texas, Nick Ohmer, and Excelsior. All of the varieties, without exception, died due to the dry hot summer of 1923 and 1924. The Klondike variety was the only variety that withstood
the adverse climatic conditions. We have therefore no results on yields for this season; the crop resulted in a total failure.

**Muscadine Grape Culture.**

The object of the test is to determine the practicability of commercializing the production of Muscadine grapes. This is the third season of their growth.

A cover crop of cowpeas was grown during the summer and an application of 200 lbs. of 16% acid phosphate was given in March, 1924. A crop was set during the summer of 1925 but owing to the droughth, a good deal of the fruit dropped off. The grapes ripen in August and September.

The vines were pruned with the Kniffin System, six arms on a trellis of three wires. They made a vigorous growth in spite of the dry weather.

**Blackberry Culture.** (A supplementary crop to the strawberry crop).

The MacDonald variety interplanted with the Lucretia dewberry, was used. They received a liberal application of barnyard manure during the spring, and were cultivated four times. A heavy crop of fruit was set during the spring of 1925, but owing to the droughth, most of the fruit dried up on the bushes. The total amount harvested from one-half acre, was 34 crates and 16 pints, which sold for $55.38. Five crates were shipped to Chicago, and sold for $10.18; they were reported to have arrived in excellent condition. Difficulty was had in having them harvested. The strawberry pickers would not pick blackberries because of the thorns.

**Rotation for Strawberries.**

The following rotation has been followed for the past season: Strawberries followed by corn and cowpeas, followed by a crop of soybeans. The cowpeas have not been satisfactory in the corn; they have not made sufficient growth. The soybeans gave about a ton and a half of hay and were more satisfactory than the cowpeas.

**Satsuma Orange Culture.**

One hundred Satsuma trees were set out in the spring
of 1925. Owing to the dry weather, only thirty-five trees lived through the past summer. They were mulched with barnyard manure and received frequent cultivation.

Pecan Culture. (Pruning to stimulate fruitfulness).

Not sufficient growth was made in the past three summers to prune the trees; therefore no results are available.

Stocks for Pecan Grafting.

The seedlings are not large enough for grafting. The seasons have been adverse for the growth of the seedlings; they have not made uniform growth on that account.

The summers of 1923 and 1924 were very dry and unfavorable for the crops.

DR. W. H. DALRYMPLE.

Dr. Dalrymple came to Louisiana as Professor of Veterinary Science at Louisiana State University, and Veterinarian of the Experiment Stations in 1889. He was a native of Scotland, a graduate of Stranraer College and of Glasgow Veterinary College. He was a member of the Royal College of Veterinary Surgeons. In 1888 he was made a member of the Veterinary Staff of the Irish Privy Council, of Dublin, an honor in which he always took just pride. In 1893 he resigned from the University, spent a short period in England and Scotland, but returned to Baton Rouge to practice the profession of Veterinary Médecine. In 1897 he again entered the service of the University, and so continued up to the time of his death, July 17, 1925. During a period of nearly two years, 1919-21, he was Dean of the College of Agriculture and Director of the Experiment Stations. Failing health made it necessary for him to be content with lighter duties.

Dr. Dalrymple's principal contribution to agricultural literature were on Texas fever of cattle, internal parasites of sheep, charbon or anthrax, livestock sanitation, and livestock obstetrics. He was for many years Editor of the livestock and agricultural page of the weekly issue of the Times-Picayune, New Orleans, and for a considerable period, edited and published the Journal of the American
Veterinary Medical Association. He was a fluent writer and contributed liberally to the current literature of themes that interested him. He was always justly proud of his success in inducing the City Council of Baton Rouge to construct a modern abattoir and meat inspection system, which has been used as a model by many other enterprising cities.

Dr. Dalrymple was a member of a long list of scientific and agricultural societies. He sponsored the legislative bill creating the Louisiana Livestock Sanitary Board, and did much to make the work of the Board effective. He was universally loved by those who knew him best. He was public spirited and took an active part in local church and civic activities. The influence of his scholarship will have an influence on the Experiment Station work and upon Veterinary Science, for a long time,

Dr. Dalrymple’s private library of several hundred volumes, was donated by Mrs. Dalrymple to the Louisiana State University.