1957

Annual report of the Louisiana Agricultural Experiment Station for the fiscal year 1955-56.

Charles W. Upp

Follow this and additional works at: http://digitalcommons.lsu.edu/agexp

Recommended Citation

Upp, Charles W., "Annual report of the Louisiana Agricultural Experiment Station for the fiscal year 1955-56." (1957). LSU Agricultural Experiment Station Reports. 285.
http://digitalcommons.lsu.edu/agexp/285
ANNUAL REPORT
Of The
Agricultural Experiment Station
For the Fiscal Year 1955-56
CHARLES W. UPP, Director
Louisiana State University
and
Agricultural and Mechanical College

HOMER
SSIER CITY
CALHOUN
WINNSBORO
CHASE
ST. JOSEPH
CHAMBERS
DeRIDER
CROWLEY
CLINTON
JEANERETTE
FRAKLINTON
HAMMOND
LS.U.

Main Station, Baton Rouge
Branch Stations
Other Research Centers

PORT SULPHUR
ANNUAL REPORT
Of The
Louisiana Agricultural Experiment Station
For the Fiscal Year 1955-56

LOUISIANA STATE UNIVERSITY
AND
AGRICULTURAL AND MECHANICAL COLLEGE
Baton Rouge, Louisiana
CHARLES W. UPP, Director
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter of Transmittal</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Agricultural Chemistry and Biochemistry</td>
<td>6</td>
</tr>
<tr>
<td>Agricultural Economics</td>
<td>9</td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>14</td>
</tr>
<tr>
<td>Agronomy</td>
<td>17</td>
</tr>
<tr>
<td>Animal Industry</td>
<td>20</td>
</tr>
<tr>
<td>Dairy Research</td>
<td>22</td>
</tr>
<tr>
<td>Entomology</td>
<td>26</td>
</tr>
<tr>
<td>Fertilizer and Feedstuffs Laboratory</td>
<td>29</td>
</tr>
<tr>
<td>Forestry</td>
<td>30</td>
</tr>
<tr>
<td>Home Economics</td>
<td>33</td>
</tr>
<tr>
<td>Horticulture Research</td>
<td>36</td>
</tr>
<tr>
<td>Plant Pathology</td>
<td>40</td>
</tr>
<tr>
<td>Poultry Research</td>
<td>46</td>
</tr>
<tr>
<td>Rural Sociology</td>
<td>49</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>51</td>
</tr>
<tr>
<td>Veterinary Science</td>
<td>53</td>
</tr>
<tr>
<td>Substations</td>
<td>55</td>
</tr>
<tr>
<td>Fruit and Truck Experiment Station, Hammond</td>
<td>55</td>
</tr>
<tr>
<td>North Louisiana Experiment Station, Calhoun</td>
<td>58</td>
</tr>
<tr>
<td>North Louisiana Hill Farm Experiment Station, Homer</td>
<td>60</td>
</tr>
<tr>
<td>Northeast Louisiana Experiment Station, St. Joseph</td>
<td>64</td>
</tr>
<tr>
<td>Plaquemines Parish Experiment Station, Port Sulphur</td>
<td>67</td>
</tr>
<tr>
<td>Red River Valley Experiment Station, Curtis</td>
<td>70</td>
</tr>
<tr>
<td>Rice Experiment Station, Crowley</td>
<td>74</td>
</tr>
<tr>
<td>Southeast Louisiana Experiment Station, Franklinton</td>
<td>77</td>
</tr>
<tr>
<td>West Louisiana Experiment Station, DeRidder</td>
<td>80</td>
</tr>
<tr>
<td>Iberia Livestock Experiment Farm, Jeanerette</td>
<td>82</td>
</tr>
<tr>
<td>U.S. Department of Agriculture Progress Reports</td>
<td>84</td>
</tr>
<tr>
<td>Financial Statement—Agricultural Research Funds</td>
<td>86</td>
</tr>
<tr>
<td>Agricultural Experiment Station Staff</td>
<td>87</td>
</tr>
</tbody>
</table>
Letter of Transmittal

Baton Rouge, La.
April 15, 1957

Governor Earl K. Long
Baton Rouge, Louisiana

My Dear Sir:

I have the honor to transmit herewith, through the Dean of the College of Agriculture and the President of Louisiana State University and Agricultural and Mechanical College, the report containing an account of the activities of the Louisiana Agricultural Experiment Station for the fiscal year 1955-56, as required by the Hatch Act, which provided for the establishment of Agricultural Experiment Stations in the several states.

Copies of this report will be sent to the United States Department of Agriculture in Washington, D. C., and to the other Experiment Stations, as required by the Hatch Act, and a sufficient number will be printed to supply members of the Legislature, Public Boards, libraries and leading agriculturists.

Very respectfully,

Charles W. Upp, Director
Louisiana Agricultural Experiment Station
Introduction

It has long been recognized that research is indispensable if farming is to keep pace with other segments of the economy. And because agriculture consists of so many relatively small, independently operated units, some system that will provide the necessary research for these thousands of small units is necessary. The Louisiana Agricultural Experiment Station serves as the research arm for Louisiana agriculture.

The objective of the Experiment Station is to maintain a program of research directed toward the creation of new knowledge and the solution of problems in agriculture. More than the vocation of farming is involved—the program encompasses a vast field of activities beginning on the farm and extending through the channels of trade to the consumer.

The program of the Louisiana Agricultural Experiment Station is conducted in fourteen departments, at nine branch stations, and at five other outlying centers. In addition, some outfield tests are conducted on private farms. The branch stations were established in recognition of the broad range of soil, climate, crops, and types of farming in the state. Conducting the research is a staff of more than 200 scientists, many of whom are on a part-time basis, since they are also on the University's resident instruction staff.

The Annual Report of the Louisiana Agricultural Experiment Station, this year, is a departure from previous reports. Instead of giving results of individual experiments, each department and branch station, in the pages that follow, has prepared a statement outlining its program of work. Plans are under way to issue a periodical to supplement the report, and further acceleration of the publication of results in the form of bulletins, circulars, and articles in scientific journals is planned. The formal listing of current activities and accomplishments indicates the size and diversity of the work of the Station.

The staff welcomes the opportunity to outline, in this report, the program of agricultural research in Louisiana. Additional information is available on the topics mentioned and may be obtained by writing to the department concerned or to the Director's office.

Charles W. Upp, Director
Agricultural Chemistry and Biochemistry

Toxicity studies of plants and plant products have been continued during the past year. The investigation of Singletary pea toxicity revealed that casein added to a lathyrogenic ration slows the onset of severe lathyritic symptoms in the rat. Various biochemical determinations showed that casein increased the creatinine coefficient and the concentration of muscle creatine.

The fat solvent, trichlorethylene, has been used at times for the extraction of soybean oil from the soybean. Unfortunately, meals thus extracted may be exceedingly toxic to cattle. Therefore an attempt has been undertaken to produce in a small laboratory animal, the albino rat, readily observed symptoms of toxicity similar to those found in cattle fed trichlorethylene extracted meals.

A knowledge of the fundamental chemical differences between rice varieties may prove of value to the rice industry in permitting the prediction of processing behavior of new varieties without lengthy and expensive experimentation. The preparation of pure amylose from rice starch has been achieved and will be continued for typical long, medium, and short-grained varieties in order to compare their physical and chemical properties.

The limiting factor in the production of honeybees is the availability of pollen which is the sole source of their dietary protein. A search for high protein substitutes for pollen as well as attractants is in progress. The way in which the rate of sugar crystallization in honey is affected by temperature, the addition of various inhibitors to honey, and direct feeding of inhibitors to honeybees are being investigated.

The fundamental biochemical changes which involve death of living organisms is being undertaken. The retention of viability of pine seeds and of pollen is being studied. Since pine trees produce a normal crop of seeds every three years the necessity for storing seeds of high-yield years to meet demands during light-crop years is apparent. The successful storage of pollen will permit geneticists to make crosses between varieties of plants whose flowering periods do not coincide. A complementary phase of this broad project is the development of a rapid laboratory test for drought and frost resistance of pine cross seedlings.

Research on the preservation of shrimp and oysters, two marine products of economic importance to Louisiana, was continued
in cooperation with the Fish and Wild Life Service of the Department of the Interior and the Louisiana State Department of Wild Life and Fisheries. Fundamental biochemical studies of the enzyme system causing black spot on shrimp were begun. The oyster research involved frozen storage studies on Gulf oysters. The nutritive value of these two foods was also investigated.

The presence of a new growth factor in concentrates from plant material is postulated on the basis of recently obtained results. The concentrate has been effective in the preparation of an improved assay medium for determination of pyridoxine in multivitamin products containing phytological concentrates.

In fundamental biochemical studies the following are important achievements. The investigation of the role of biotin in the nutrition of micro-organisms suggests the enzyme hexokinase as a site of biotin involvement. Steady progress is being made on how certain of the B vitamins stimulate specific enzymes.

A commercial preparation of Sudan III, a stain widely used in biological research, has been previously found to contain a number of colored components. Two of the colored components have been isolated in pure form and their physical and chemical properties are being studied. The isolation and identification of other components is contemplated.

In the field of human nutrition, work has continued on the following phases. A statistical analysis is being made of the data obtained from 218 male student volunteers under standardized conditions of psychological and physiological stress. In a regional cooperative undertaking with other southern experiment stations conducted at Virginia Polytechnic Institute, the nitrogen balance and its interrelationship with other nutrients of 12 girls, 7 to 9 years old, was studied. An important finding was that the level of protein intake prior to the experiment appeared to influence the nitrogen values during the experiment much more than did the level of protein in the experimental diets. The children with a history of high protein dietaries showed the highest retention values regardless of the protein content of the experimental diet.

**Research Projects**

Human Nutritional Utilization of Certain Dietary Essentials from Vegetable Sources. W. H. James, G. E. Mann, J. C. Dozier, and N. R. Ellis.

Human Metabolism of Carotene and Vitamin A. W. H. James, G. E. Mann, J. C. Dozier, and N. R. Ellis.


Freezing Eggs. S. A. Kaloyereas.

Inter-Reaction between Inositol and the Various Isomers of the Chlorine analog Hexaclorocyclodexane. J. F. Christman.

The Mechanism of Action B-Vitamins. J. F. Christman.

Biotin and Oleic Acid in the Nutrition and Metabolism of Microorganisms. V. R. Williams, J. F. Christman, and S. E. Cauthen.


Dehydrofreezing. S. A. Kaloyereas.


The Effect of Milk, Meat and Egg Proteins on the Storage and Excretion of Niacin and Niacin Metabolites in the Rat. M. E. Hollinger.

Aphydatosis. S. A. Kaloyereas.


Chromatography and Biological Stains. J. F. Christman.

A Study of Aspartic Acid Deaminase. V. R. Williams.


Thiamine Balance and Its Interrelationship with other Nutrients in Preadolescent Girls. M. E. Hollinger.


Pollen Storage and Germination. S. A. Kaloyereas and E. B. Suyder.

Preservation of Forest Seeds. S. A. Kaloyereas and W. Mann.

Honey Crystallization. S. A. Kaloyereas and E. Oertel.
Bulletins, Circulars, and Articles in Scientific Journals


KALOYERAS, S. A. A New Test for Thermostabilized Eggs. Food Technology.


Agricultural Economics

Research carried on by the Agricultural Experiment Station through the Department of Agricultural Economics has to do with the business aspects of farming. Success in the business of farming is affected by the efficiency with which land, labor, and capital are combined on the farm and market conditions and laws which have an impact upon the general economy.

The main objective of the research program in Agricultural Economics is to make available information on costs, returns, and margins needed by farmers in order to improve their financial
status through better adjustment to conditions of change, and the elimination of maladjustments in the marketing channels through which their products travel on their way to the final consumer.

The department serves as a clearing house for individual requests for information with respect to the production of various farm products, enterprise costs, actual and expected price trends, market conditions, merchandising and market development, land prices, how the Soil Bank affects enterprise combinations, regulations with respect to Federal milk marketing orders, and numerous other matters.

At present, research is being done in farm management and costs, marketing, agricultural statistics, land and farm product prices, and farm finance. Marketing studies in progress concern milk, livestock, poultry and eggs, cotton and cottonseed, fruits and vegetables, and floricultural and ornamental products. The nature of individual projects may be seen by a study of the list of active projects included in this report. Much of the research work being done was activated by a direct request from farmer organizations. All requests cannot be honored at once, so those affecting the largest number of farmers are given priority.

Special mention should be made of research work being started in connection with the problem of rural people having very low incomes. The initial effort will be to find the cause of low incomes and the nature of the remedial measures needed. For those families where the cause of low income is found to be economic in nature, much of the fundamental research done on the income problem will be applicable. Research which has to do with the low income segment of our rural population is being given national attention through the Rural Development and the Farm and Home Development programs being sponsored by the United States Department of Agriculture.

**Research Projects**


Marketing Livestock and Livestock Meat Products in Louisiana.

M. D. Woodin and C. S. Clergy.

System of Marketing Table Eggs From Commercial Type Flocks. E. P. Roy and D. B. Frickie.
Economic Integration in Processing and Distributing Broilers and other Poultry Meats. D. B. Frickie and E. P. Roy.
Improving the Usefulness of Livestock Marketing Information. M. D. Woodin.
Prices Received and Prices Paid by Louisiana Farmers. J. P. Montgomery and C. O. Parker.
Cost of Producing Sugar Cane on Plantations, Cost of Manufacturing, and Methods of Marketing Sugar. J. R. Campbell.
Farmer’s Business Cooperatives in Louisiana. B. M. Gile.
Farm Real Estate Transfer Prices and Financial Situation on Family Farms. B. M. Gile.

**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**

ALEXANDER, W. H., and A. J. ORTEGO. An Analysis of Proposed Amendments to the Federal Order Regulating the Handling


CAMPBELL, J. R. Costs and Returns on Family-Type Sugar Cane Farms, 1954 Crop Year. DAE Circular No. 186, January 1956.

CAMPBELL, J. R. Costs and Returns on Large Sugar Cane Farms, 1954 Crop Year. DAE Circular No. 188, June 1956.


FRICKIE, D. B. Relationship of Grade, Dressing Percentage, and Weight to Price of Slaughter Calves in Louisiana. DAE Circular No. 191, May 1956.


TRAYLOR, H. D. An Analysis of Two Types of Variation in Cattle Prices at Auction Markets in Louisiana. DAE Circular No. 182, October 1955.


WOODIN, M. D. Factors Involved in Integrating Livestock into a Diversified Program. Polled Hereford World, Vol. IX, No. 9, September 1955.
The Agricultural Engineering Department is conducting research along the lines summarized below.

In sugar cane, a rotary tiller for the incorporation of mulch into the seedbed, as well as destroying stubble, has been designed and built. Investigations of present quarter drain maintenance and equipment for installation of quarter drains is under way, with the idea of developing a more efficient and economical method of installation. The design and construction of a mechanical feeding device to replace hand feeding on a sugar cane planter is under test. The work on flat planting of sugar cane is being continued.

In the field of rice, small grain, and grass seed harvesting and drying, studies are being conducted on various drying systems with and without heat, and on storage conditions best adapted to Louisiana farming. The possibility of increasing the amount of clover and grass seed saved during harvesting by a vacuum attachment and a forage harvester is also being studied.

A building has been constructed from the soil-ash blocks, and temperature studies have been started.

With hay and silage, several above-ground trench type silos have been made of various materials and are now under test. A better method of removing silage from bunker silos is being investigated.

With sweet potatoes, two harvesters have been developed and brought up to date, and machines have been studied for applying chemicals for weed control in connection with planting. Storage studies are under way in connection with the most suitable type of house, cost, and keeping qualities.

Research has been started on the control of grasses and weeds in cotton throughout the growing season. This includes pre-emergence, post-emergence, and late application of chemicals. Nozzle types and arrangement for the application of agricultural chemicals are being studied. Crop production procedures and preparation of crop for harvesting in relation to weed control and cotton quality are receiving attention.

In the electrical field, an efficient, light weight, economical, under-heat brooder was designed and built and is being widely accepted by poultrymen.

Irrigation projects are rather widespread, and cover the application of soluble fertilizers through sprinkling lines, head
losses with different aluminum pipe systems, and the application rate, soil moisture capacities, etc. at eight places in the state on different crops.

With anhydrous ammonia, the draft and wear characteristics of applicator feet are being evaluated. Approximately 100 tests were carried out during the past year on anhydrous ammonia hose, valves, and fittings. This is improving the design and increasing the safety of the equipment at no additional cost to the farmers.

Soil and water management investigations of the Mississippi River Delta Region are being conducted as a joint undertaking of the USDA Agricultural Research Service and the Louisiana Agricultural Experiment Station. Seventeen deep tillage tests have been installed in the state covering both cotton and sugar cane land. Deep tillage was effective in increasing yield on light soils. Black land did not show any significant increase. Experimental trials of land grading to develop methods to improve drainage and facilitate irrigation are being carried on both on cotton and sugar cane land. Soil physical and climatological study to evaluate drought frequencies and water holding capacity of Louisiana soils is approximately 75 per cent complete.

Research Projects

Rice, Small Grain, and Grass Seed Harvesting, Handling, and Drying. F. T. Wratten.


On-the-Farm Bin Drying. F. T. Wratten and H. T. Barr.


Development of a Sugar Cane Planter. M. M. Mayeux.


Rice Drying and Storage. F. T. Wratten and R. P. Walker.


**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**


Poole, W. D. Chemical Weed Control in Sweet Potatoes. May 1956. Dept. Cir. No. 22.

The work of the Agronomy Department consists of research on field crops and soils. Research and experimental studies with crops include genetic and cytological studies with rice, cotton, and grasses; and crop improvement and varietal adaptation studies with cotton, corn, soybeans, oats, pasture grasses, and legumes. The soil projects cover experimental work with fertilizers for corn, cotton, rice, sugar cane, soybeans, pasture grasses, and legumes. The Department is conducting research in the field of soil science on soil classification and development, trace elements, phosphorus, magnesium, lime, soil structure, and nitrogen fixation and losses.

A cytogenetic study with rice, which has for its purpose the explanation for sterility between certain rice crosses, has indicated that the sterility may be due to structural differences in the chromosomes of the parents. Genetic studies of fiber and seed characteristics of cotton have been made. No evidence of genetic linkage between fiber strength and several other economic traits including wall thickness, perimeter of fiber, seed size, lint density, lint percentage and lint index has been found in the interspecific hybrids.

The work in plant breeding and crop improvement has been very productive. Over 1,000 acres of cotton for registered seed of the variety Stardel were grown in 1956. Fiber and spinning strength tests of the lint of this new variety show it to be approximately 10 per cent stronger than other varieties now in current production. Work is continuing on the production of more desirable corn hybrids. Approximately 120,000 acres of corn will be planted to Louisiana and Dixie hybrids in 1957. Bienville, a new variety of soybeans particularly adapted to south Louisiana, is being released. This variety and seven other strains are proving to be well adapted to Louisiana and adjoining states. Foundation seed for increasing the seed supplies of Louisiana Strain 1 red clover is being given particular attention. The development of sufficient seed supplies will markedly add to the production and quality of forage. Breeders' seed plots are also being maintained for Louisiana Strain 1 white clover, which has become established as a greatly improved variety. The evaluation studies have shown that mixtures of rescue grass with clovers are superior to mixtures of other adapted winter grasses.

Results from experiments with fertilizers applied to the major crops show that the use of more and better suited ferti-
lizers could increase the yield of sugar cane 20 per cent, the yield of rice 40 per cent, and the yield of cotton 50 per cent. The yields of pasture and hay could be doubled and the yield of corn increased threefold. Experiments in soil physics show that in drier growing seasons subsoiling and deep application of fertilizers are particularly beneficial.

The soil survey and report for Terrebonne Parish has been completed. The preliminary investigation of trace elements in soils of Louisiana indicates that relatively few deficiencies in boron are likely to develop. Soluble forms of magnesium have been found to be beneficial when applied in fertilizers containing no sulphates and to soil low in magnesium. Evaluation of adsorbed phosphorus in soils developed on Pleistocene terraces should be taken into account in soil testing. The interactions of various sources of lime with phosphorus and potassium have marked influences on crop response to these elements. Winter legumes in row-crop rotations and legumes in pasture sods are of great benefit in improving and maintaining desirable soil structure and in increasing the soil nitrogen.

Research Projects

Soybean Breeding. J. P. Gray.
Cotton Breeding and Genetics. F. W. Self.
Oat Breeding. J. P. Gray.
The Distribution of Magnesium in the Soil of Louisiana as Related to the Growth of Certain Crops. R. H. Brupbacher.
The Improvement of Dallis Grass (Paspalum dilatatum) for seed and Forage Production. C. R. Owen.
The Development of New Strains, Varieties or Types of White Clover, Red Clover, and Annual Lespedeza. C. R. Owen.
The Relation of Field Classification of Soils of the Coastal Plains and Soils of the Lower Mississippi Flood Plain to the Physical, Chemical, and Mineralogical Characteristics of the Soil Profiles. S. A. Lytle, B. N. Driskell, and E. F. Young.
Breeding Improved Forage Plants, Particularly Red and White Clovers, for the South. C. R. Owen.

Soil Physical Conditions and Fertilizer Placement as Related to the Production of Cotton, Corn, and Sugar Cane. W. H. Patrick and M. B. Sturgis.


Fertilizer Experiments with Cotton, Corn, and Oats. B. E. Newman and M. B. Sturgis.

Forage Crops Production. J. P. Gray.


Hybrid Corn Testing and Seed Increase. L. F. Mason and H. Stoneberg.


Bulletin, Circulars, and Articles in Scientific Journals


Other Articles and Mimeographed Material

STURGIS, M. B., and D. S. BYRNside. Fertilizers for Sugar Cane.

Animal Industry

The Animal Industry Department conducts research on problems in breeding, feeding, and management of meat animals. Projects are aimed at increasing income of Louisiana livestock producers.

Emphasis in cattle nutrition has been on the expanded utilization of home-grown roughages and other feeds available in large quantities in Louisiana which would otherwise be wasted. Among these feeds are molasses, rice straw, hay, sugar cane bagasse, and cottonseed hulls. Rations including these low quality roughages and containing as high as 40-50 per cent molasses have given good results in wintering and fattening cattle. No detrimental effects of the high levels of molasses have been noted.

A preliminary steer feeding trial demonstrated the value of anhydrite (anhydrous calcium sulphate) in limiting cottonseed meal intake by cattle. Investigations of methods of pasture development and management have been continued. A new Federal project on nutritional studies with beef cattle with emphasis on mineral metabolism was initiated during the year.

The value of cottonseed meal supplemented with various amino acids in swine rations is under investigation. The value of raw sugar as a feed for swine has been demonstrated. Pigs fed as high as 30 per cent raw sugar in their ration between the weights of 60 and 200 pounds showed little or no decrease in daily gains or loss in feed efficiency as compared to the control lot.

The regional beef cattle crossbreeding project approached the end of the first phase during the year. Animals produced during this first phase (first generation crossbreds) will be placed on the second (back-crossing) phase during 1957. Carcass evaluation of steers produced on this project is conducted in the depart-
mental meat laboratory. First-phase results indicate that Brahman-Angus and Brahman cows produce heavier calves at weaning time than do Hereford and Angus cows. It has also been shown that Charolaise, Shorthorn, and Hereford bulls sire calves which are heavier at weaning than those sired by Brahman, Brahman-Angus, and Angus bulls. Carcass data have shown that animals without Brahman breeding have gained more on feed and have had better carcass grades than the Brahman or crossbred Brahman cattle.

Studies on the mode of inheritance of dwarfism and "double muscling" in beef cattle are being continued.

Swine breeding work has centered around two "lines" of Durocs which show desirable "meat type" characteristics. Inbreeding in these lines has not caused any reduction in litter size, rate of gain, or area of eye muscle. Carcasses of barrows and some of the gilts on this project are evaluated in the departmental meat laboratory. The effects of year-round pasture on reproductive performance in gilts is also being studied. Ovulation rates and embryo survival rates are determined by laboratory studies.

Performance testing of beef bulls was begun at the university and continued for the second year at the Dean Lee Agricultural Center. The sale of these bulls at the Dean Lee Agricultural Center in the order of rate of gain on test indicated that breeders paid a lot of attention to gaining ability. However, many other factors also influenced the breeders' choice of bulls. Plans are being made to establish a beef cattle and swine testing station at the Dean Lee Agricultural Center to be used in "custom" performance testing work.

Research Projects

The Value of an All Year Grazing Program on the Reproductive Performance of Swine. C. B. Singletary and G. L. Robertson.


Other Articles and Mimeographed Material


Dairy Research

The Research program of the Dairy Department has been developed largely since 1948 with particular emphasis on the value of certain breeding and management practices for improved milk production and breeding efficiency of dairy cattle. Studies have also been conducted on the use of antibiotics and certain chemicals for dairy cattle and for the preservation of milk and milk products. In the future, considerable emphasis will be placed on methods of utilizing Louisiana by-products, such as bagasse, rice hulls, molasses, etc., more efficiently for feed, and on the
value and practicability of various systems of irrigation for quality forage production. Special attention will be given to the relationships of various fiber levels and lignin contents of forage crops, produced under different conditions, to heat production and milk production of dairy cattle. Preliminary studies have been made on methods of producing bloat experimentally and on fundamental causes of bloat. The departments actively cooperating on this work at present are Dairy, Agronomy, and Veterinary Science. In the paragraphs to follow, brief comments will be made about some of the research work.

Management practices during the summer months showed that grazing cattle on excellent pastures provided with shade and water was as effective as chopped forage in maintaining milk production. Animals fed chopped forage in the shade divided their dry matter intake evenly between day and night. This indicates that animals decrease their grazing activity during the day because of solar radiation and not necessarily because of the effect of hot weather on appetite. The direct effects of hot weather on the animals were not apparent until they had been exposed to a hot environment for at least 45 days, although the nutritional effects were immediate and rather pronounced.

Studies with the Red Sindhi-Holstein animals under thermal stress indicate that the greater heat tolerance of the crossbreds is due primarily to a lower basal heat production rather than to heat production associated with milk production or heat loss.

Because of the increasing importance of artificial breeding as a means of dairy cattle improvement and because of the apparent adverse effect of hot, humid environments on the breeding efficiency of animals in Louisiana, research work on ways of increasing the breeding efficiency of dairy bulls and cows must be expanded. It is anticipated that the use of frozen semen will be a valuable aid in studies of this type. Management studies indicate that bulls kept indoors and exposed to air movement or air movement and water spray decline only slightly in semen quality and fertility during the summer months. Similarly, animals kept in outside paddocks with natural shade showed no decline in semen quality or fertility. This would indicate that the outside bulls were more comfortable than those inside, perhaps due to greater air movement.

Since very little information is available on the relationship of environment to the fertility of the dairy female, increased emphasis is being placed on the reproductive efficiency of the cow. Data will be collected on anestrus, skipped heat periods, and repeat
breeding in order to formulate a code of management practices that will enable the dairyman to obtain higher fertility in his herd.

The dairy department has gained national and international recognition during recent years for its studies on antibiotics. Aureomycin has been shown to be effective in controlling scours and reducing death losses prior to 8 weeks of age and has produced an 18 per cent increase in growth rate up to 16 weeks of age. Stilbestrol appeared to have no effect on growth. However, it did increase the teat lengths of the calves by as much as 4 times and cause the testes to be considerably smaller than those of animals not fed the hormone.

Practically no research work has been done in dairy technology. Because of the rapid growth of the dairy industry in this state, and the increasing requests of dairy plant owners and superintendents for more technical advice, it is felt that considerable emphasis must be placed on research work in this area in the near future.

Research Projects


Studies on Feeding Molasses and Molasses By-Products (Ammoniated Molasses) to Dairy Cattle. L. L. Rusoff and J. B. Frye, Jr.


**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**


Entomology Research

Cotton insect investigations were directed primarily toward solving the problem created by the boll weevil's developing resistance to the chlorinated hydrocarbon insecticides. Control measures for areas infested were developed based on use of calcium arsenate and the organo-phosphorus insecticides. The possibility of blocking resistance by use of chlorinated hydrocarbon organo-phosphorus insecticide mixtures was investigated.

A study was begun to determine the genetics of resistance in the boll weevil. Resistant and susceptible populations were studied under controlled conditions in the laboratory for possible differences in biology or physiology.

Additional information was obtained on the effect of different levels of pink bollworm infestation on yield and quality of cotton. The effect of various insecticides on eggs, larvae, and adults of the pink bollworm was determined. A survey of species and varieties of Gossypium as possible sources of resistance to cotton pests was initiated.

Use of soil fumigants and resistant varieties for control of the rootknot nematode-fusarium wilt complex was studied at new locations in the state. Further evaluation was made of the effect of reniform nematode infestations on yield and quality of cotton. The effectiveness of various nematocides for control of this species was determined in field tests.

The possibility of cheaper and more economical control of the sugar cane borer with chlorinated hydrocarbon insecticides was studied with encouraging results. Work on control of sugar cane beetle, wireworms, and a soil arthropod complex by application of insecticides at planting time was continued at several locations and on different soil types. A promising lead in control of the sugar cane beetle by timing insecticide applications was explored.

Seasonal occurrence of the strawberry sap beetle was correlated with the development of the strawberry crop. An effective method for control of DDT-resistant cabbage loopers by use of perthane-malathion combinations was developed. A program of research on the biology and ecology of major vegetable crops pests was begun with the objective of obtaining information from which control measures may be developed that are less likely to have objectionable insecticide residues. Use of planting dates as a means of reducing injury to sweet corn by the corn earworm was
found to offer promise. Reproductive behavior of the corn earworm and several other Phalaenid moths was studied using techniques of serial morphology.

Forage crop insect investigations were activated during the year. Much of the initial phases of this work will be devoted to evaluating the effect of various pests on yield quality of crops attacked. Control of soil insects with granular insecticides applied at the time of seining clover showed special promise. Physiological and ecological factors involved in the evocation and termination of diapause in the legume mite were studied further and are now partially understood.

Response of several species of spider mites to acaracides having different modes of action was correlated with their phylogenetic relationships. Investigations of factors responsible for increased spider mite damage following use of chlorinated hydrocarbon insecticides were continued.

Stored grain insect studies were continued, with emphasis on the biology and ecology of the rice weevil and the relative importance of other species to corn and rice. Additional information was collected on the relation of field infestations of corn by various species of stored grain pests to the subsequent development of infestations during storage. The effect of corn earworm and bird damage to husks of corn was correlated with development of rice weevil infestation. Work comparing lindane impregnated sawdust with conventional fumigants for control of stored grain pests of corn and rough rice was continued.

The effect of lindane impregnated bagasse used for control of the chicken body louse on growth, production, and flavor was determined.

Insects associated with sweet potatoes were studied as possible vectors of internal cork virus. Virus transmission studies by insects in greenhouse and screenhouse experiments are in progress. Possibility of control of the vector, or vectors, by insecticide application in the field was investigated.

Sweet potato weevil control studies in the field were directed toward improvement in methods and timing of insecticide applications. Methods of application of insecticides for control of soil insects which damage sweet potatoes in the field were compared with recommended procedures.

A laboratory to study resistance of cotton insects to insecticides was activated during the year in cooperation with the Entomology Research Branch of the U. S. Department of Agriculture.
The Departments of Horticulture, Poultry Industry, Agronomy, and Plant Pathology and the Entomology Research Branch cooperated in various phases of the work of this department.

**Research Projects**

Biology and Control of Insects Affecting Vegetable and Fruit Crops. P. S. Callahan and R. R. Brown.

Investigation of Insects which are Destructive to Leguminous Forage and Cover Crops. D. F. Clower.


A Study of the Destructive and Beneficial Insects of Sugar Cane in order to Develop Economical and Practical Measures of Controlling the Harmful Species. L. D. Newsom and E. J. Concienne.


Biology and Control of Insects and Mites Attacking Forage Crops. D. F. Clower and L. D. Newsom.

Biology and Control of Insects, Ticks, and Mites Which Attack Livestock and Poultry. E. H. Floyd and B. A. Tower.


Biology and Control of the Pink Bollworm. J. R. Brazzel.

**Bulletins, Circulars, and Articles in Scientific Journals**


Other Articles and Mimeographed Material


Feed and Fertilizer Laboratory

The principal function of the Feed and Fertilizer Laboratory is to analyze samples of feeds, fertilizers, and pesticides submitted by the Commissioner of Agriculture. These samples are taken by inspectors in various places in the state and are tested for conformity to state laws.
Each year the laboratory is being called upon for more and more service work such as testing water, analysis of feeds and fertilizers for farmers, examination of specimens from livestock suspected of having been poisoned, etc. Assistance with analytical phases of their research is given other departments. Analysis of forages, determination of pesticide residues, and analysis of mixtures used in feeding trials are routinely performed.

Because of the rapid changes in the field of analytical chemistry, considerable time must be devoted to developing and improving analytical techniques.

**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**

**DEPARTMENT STAFF.** Annual Report, Division of Agricultural Chemistry. Cooperative work with Louisiana Department of Agriculture. 1955.

---

**Forestry**

The School of Forestry conducts research on problems relating to the forests and game of Louisiana. Studies are under way on various aspects of establishment of forest stands, methods of silvicultural treatment, and utilization of forest products. Studies in game management include relationships between forests and game, fish pond management, ecology of woodcock, and research in the ecology of the coastal marshes.

Results of a study of geographic seed sources of loblolly pine showed no significant differences in planted trees with respect to survival and height growth at the end of the third year. This research is being expanded to include seed of more widespread geographic origin.

About 40 new permanent sample plots were established in bottomland hardwood forests throughout the state. The changes in vegetation on these plots over a period of years will be studied in order that recommendations for forest management may have a sound scientific basis.
Slash pine outstripped loblolly pine in height growth in southwestern Louisiana plantations. Height growth of loblolly pine was retarded by tip moth infestation. Longleaf pine has not survived well in plantations in this area.

Aerial applications of hormones were made in western Louisiana in order to find an economical method of freeing pines from hardwood competition. Most hardwoods were weakened or killed by the chemicals and few pines above seedling size were killed.

The effects of stand density, age of stand, site quality, and amount of associated hardwoods on the quality of loblolly pine timber (as measured by freedom from knots) were studied on sample plots in southeastern Louisiana. Quality was found to be higher in older stands and where subdominant hardwoods were present.

A survey of the relationship of the pulp industry to Louisiana’s economy was concluded. The study showed that hardwoods will be increasingly important in the future, and that additional pulp mills are probable because of the high potential productivity of the state’s forests.

Service tests of untreated native Louisiana fence post materials are being conducted, and annual inspections are being made. Species which are proving to be durable under south Louisiana conditions are black locust, catalpa, osage orange, chinquapin, white oak, cow oak, post oak, baldcypress, and red cedar.

Several clear natural finishes for wood (such as various kinds of varnish) were tested on wooden panels exposed out of doors. Most of the finishes tested gave unsatisfactory service life. One finish containing a fungicide was long lasting.

A new project was begun in wood preservation. The research is designed to determine relationships between preservative treatments and durability of paints and varnishes, dimensional stability of wood, nail-holding ability of wood, and service life of wood used in light construction. Preservative treatment of panels was begun.

Research in farm pond management showed that fertilization will increase the weight of bass considerably. Water mermaid plants growing in a pond were eradicated with chemicals.

A study of the ecology of woodcock was continued. The changes in the population of this game bird are being measured. Migration information is being collected from the return of bands.

Studies of the game habitat at the Rockefeller Refuge in the Louisiana marshes suggested that waterfowl food predilections are largely dependent upon availability rather than preference for par-
ticular food items. Analysis of duck gizzards showed the relative frequencies of species of plant seeds eaten by these birds.

**Research Projects**

The Forest and Farm as a Game Habitat—Their Development and Management. (Expanded to include fisheries work.) B. A. Bateman.
A Study of the Production and Durability of Various Tree Species When Used Untreated as Fence Posts on Louisiana Farms. M. B. Applequist.
The Ecology of Bottomland Tree Species. C. B. Briscoe.
Aerial Application of Herbicides to Control Weed Species in Forest Stands. P. Y. Burns.
Relation of Stand Composition to Quality of Pine Timber in Loblolly Pine-Hardwood Stands in the Florida Parishes of Louisiana. W. C. Hopkins.
Preservative Treatment of Louisiana Timber Species for Use in Light Construction. W. C. Hopkins.

**Bulletins, Circulars, and Articles in Scientific Journals**


Other Articles and Mimeographed Material


Home Economics

Marketing Research—Work during the year was concentrated upon the development and completion of the first pilot study concerning motivation factors influencing consumers in the purchase of beef. Projective techniques were used on the theory that data from this type of test includes socially unacceptable reasons or some other emotional basis for buying practices about which the respondent is unable or unwilling to verbalize.

A written test employing projective techniques was developed and directed toward types of questions which, in the consumers' answers, would reflect certain factors as related to basic attitudes toward cuts of beef. The test consisted of six statements and sixteen cartoons presenting ambiguous situations to be completed in imaginary story or statement form. Also included were a few direct information questions on actual purchasing practices. The written test was followed by a personal interview concerning recent experiences with various beef cuts.

One hundred and twenty-seven wives of personnel from the Louisiana State University Agricultural Experiment Station served as respondents in the study. It was evident that these respondents had a better than average understanding of beef as it is now produced and marketed. Also, a large percentage of the respondents had somewhat the same socio-economic status. Therefore, it was felt that the factors as related to various family information data did not reveal findings that would show up in a different sample.
The results indicated some of the testing techniques were more valid and reliable than others. The situations which used projective techniques seemed to give more satisfactory results.

The main factors which seemed to influence this group of consumers in their purchase of beef included time and ease of preparation, flavor, amount of fat, price, food habits of the family, status of cuts of beef, and status of beef versus other meats—particularly fish, poultry, and pork.

Although the testing instrument was keyed toward the use of beef, it was not always chosen under all conditions.

**Nutrition Research**—Plans were completed for the metabolic balance study conducted with 12 pre-adolescent girls aged 7 to 9 years to determine nutritional requirements for this age group. Four staff members participated in the work at Blacksburg, Virginia, together with 12 staff members from the Departments of Home Economics and/or Biochemistry of six other experiment stations—Kentucky, Virginia, Tennessee, Mississippi, Georgia, Oklahoma—and the Human Nutrition Research Branch of the Agricultural Research Service, U. S. D. A. This work lasted from June through August, 1956. The analysis for vitamin A and carotene concentrations in blood serum samples for the 12 subjects for 14 four-day periods have been completed. Energy determinations of food and body excreta composite samples for 12 subjects for eight four-day periods are being done at present.

In cooperation with the above project the attempt to work out a method for the determination of vitamin A and carotene in composites of mixed foods was continued. Several spectrophotometric methods and various types of chromatographic columns were tried. An apparently satisfactory chromatographic column was found, but the extraction for the spectrophotometric determination still presents difficulties.

**Textile Research**—In December, 1955, research to study factors which affect the quality of cotton fiber was approved as cooperative work between the Departments of Crops and Soils, Entomology, and Home Economics. The first phase of preliminary work included measurements of such fiber properties as length, length uniformity, fineness, and strength for certain advanced strains. Stardel and commercial varieties including Deltapine 15, Fox 0253, and Delfos 9169 were grown in randomized, replicated plots at the Northeast Louisiana Experiment Station, St. Joseph, and the Agricultural Experiment Station at Baton Rouge. Length, fineness, and strength properties were measured for each of 196
samples. Fiber analyses were made in the testing laboratory, Department of Home Economics.

Fiber of Stardel was longer than that of other commercial varieties and advanced strains. At the two stations in 1955, the commercial varieties ranked in descending order with respect to length as follows: Deltapine 15, Fox 0253, Delfos 9169, for an average of 1/32" to 1/16" shorter than Stardel. Fiber length for Delfos 9169 averaged 1.120 or 1 1/8", first replications, for Baton Rouge and St. Joseph. However, second replications for this particular variety were considerably shorter for both stations. Fiber length of commercial varieties was greater at St. Joseph than at Baton Rouge except for Fox 0253. Advanced strains 7 and 9 were longer than any of the other advanced strains and both of these were recombined with line 4-9. Further, these advanced strains averaged 4.5 to 4.8 fiber fineness and 90 thousand pounds per square inch, with both fineness and strength slightly better at St. Joseph. Advanced strain 10 was shorter in length than any of the other strains.

Fiber strength of Stardel was evaluated as strong by the adjective rating for fiber strength, or equivalent to 86-95 thousand pounds per square inch. The other commercial varieties were rated as average with respect to strength. Webb’s formulae were used to calculate predicted processing performance for strength of 22’s yarn, 50’s yarn, neps per 100 square inches of card web and yarn appearance grade for 22’s yarn. The predicted yarn appearance grade, in index units, for all cottons was rated as average to good, or an equivalent grade range of C+ to B.

A second phase of the preliminary work included measurements of length, length uniformity, fineness, and strength of materials from the Perkins Road Variety Test on crops of 1953, 1954, and 1955, as affected by nematode infestation. Materials were submitted by the Department of Entomology. Analyses of the data have not been completed.

**Research Projects**

Metabolic Balances of Preadolescent Children. D. S. Moschette and M. Skellenger.


**Bulletins, Circulars, and Articles in Scientific Journals**


---

**Horticultural Research**

Vegetables—Very satisfactory progress has been made in breeding sweet potato varieties resistant to major diseases. The Acadian variety (formerly known as L 1-13) has just been released. In the storage experiments the 60 degree temperature has been found superior. The Goldrush is now considered the best variety for canning, and this year the greatest distribution of foundation and certified seed of it, and of Unit I Porto Rico, has been made since the establishment of the Sweet Potato Research Center.

The Irish potato breeding program has for its objectives the production of early, red colored, blight and scab resistant selections of high quality and yielding ability and the development of disease resistant, white tubered selections of superior quality and yielding ability. The program has concentrated on breeding, seedling selection, yield trials, storage tests, physiological studies, and tuber processing tests. The Red LaSoda, an introduction from this station, continues to increase in popularity. The Rushmore, an oblong, russet variety, has been released and should perform better than the Burbank in certain major production areas.

Work with shallots is continuing in order to obtain a variety which produces earlier and later than regular varieties and which is resistant to pink root disease. The breeding program with onions consists of breeding varieties that are resistant to diseases such as pink root, and have better keeping quality and high solids.
Superior varieties of snap and pole beans are now being increased for commercial distribution, keeping in mind the varieties suitable for home use, commercial production, and for processing. Cold and heat tolerant strains of broccoli which will produce satisfactory heads over a long period of time during the winter and spring months are being developed. Okra is our second most important crop for processing by canning and freezing and for other industrial uses. Varieties are being developed to fit the needs of the industry.

**Fruits**—Interest in strawberries continues to be high, and a new seedling, L-188, will be named officially this season. The fruit is larger and the yields are significantly higher than from present standard varieties. The peach breeding program has resulted in the selection of one mutation and 17 outstanding seedlings, which are being increased. The marketing program on tree-ripened peaches has resulted in gains to the growers and market appeal to the consumer. Fig, the most widely grown fruit in Louisiana, is receiving its first improvement from any station in the South. A program of breeding new varieties and testing them for preserving and canning is under way. One thousand and thirty-six seedlings, resulting from 13 controlled crosses made in 1955, are now being grown and tested for rust resistance and consumer quality. The department is interested in breeding new varieties of pear that will be equal in quality to Bartlett and will also be resistant to fire blight and leaf foliage diseases. Breeding stocks have been assembled from wide areas and a large number of crosses have been made. These will be studied for adaptability to Louisiana conditions.

**Ornamentals**—Unusual interest has been shown in the ornamental program by individuals and organizations. An all-round breeding and varietal testing program is under way along with studies on cultural practices. Research on this phase is being conducted on camellias, roses, hibiscus, gladiolus, native iris, daylilies, African violets, amaryllis, and tulips. As a result of this work, several superior varieties of iris and daylilies have been released, and a number of hibiscus seedlings are being propagated for release in the near future. Excellent facilities have been constructed in the past few years for this project, and this work has attracted a large number of students and visitors to the campus.
Research Projects


A Comparative Trial on Tree Size, Growth Habits, and Yield and Percentage Oil in the Whole Fruit of Selected Mother Trees Propagated by Different Methods. E. N. O'Rourke, L. G. Jones, and H. D. Ellzey.

The Effects of Different Lengths of Dormant Period and Certain Chemicals Upon the Emergence, Productivity, and Storing Ability of Several Varieties of Potatoes. L. G. Jones, W. A. Sistrunk, J. R. King, and J. C. Miller.

Development of High Yielding Disease Resistant Potatoes for Louisiana Conditions. J. C. Miller, J. R. King, and J. F. Fontenot.

The Culture and Breeding of Creole Onions. D. Y. Perkins and E. C. Tims.


Breeding and Genetic Studies of Sweet Potatoes. J. C. Miller, T. P. Hernandez, and Travis Hernandez.


Soil Fertility Studies with Horticultural Crops. L. G. Jones.


Improvement of Okra Varieties for Production in Louisiana. J. C. Miller, L. G. Jones, F. B. Schmitz, W. A. Sistrunk, and J. F. Fontenot.
The Growing of First Year Sweet Potato Seedlings. T. P. Hernandez, J. C. Miller, and Travis Hernandez.
Production of Sweet Potato Foundation Seed. Travis Hernandez, T. P. Hernandez, and J. C. Miller.
Sweet Potato Weed Control Experiments. T. P. Hernandez, W. D. Poole, and Travis Hernandez.

Production, Breeding, and Handling of Tree and Small Fruits with Particular Reference to Figs, Pears, and Miscellaneous Fruits. E. N. O'Rourke and J. C. Miller.

Breeding Sweet Potato Varieties for Internal Cork Resistance. T. P. Hernandez, J. R. King, and J. C. Miller,
A Study of By-Products, Physical Changes, and Grades that Affect the Market Quality of Sweet and Irish Potato Varieties and Seedlings. D. W. Newsom and J. C. Miller.


Chrysanthemum Investigations: Exhibition and Hardy Types. R. H. Hanchey and W. D. Kimbrough.


**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**


**Plant Pathology**

The research programs in the Department of Plant Pathology are concerned with the control of the more important diseases of crops in Louisiana, the control of weeds in various crops, and the sugar cane breeding program.
In sweet potatoes, the internal cork disease received the most emphasis. Experiments have shown that if internal cork free potatoes are used to replace diseased planting stocks and are grown 100 yards or more away from diseased field plantings, the potatoes produced can be used for commercial plantings the next year. This is very important, since it reduces the cost per acre for changing seed stocks from $20 an acre to about $2 an acre. The use of methyl bromide has been shown to be valuable in the beds used for planting sweet potatoes to obtain slips by eliminating losses due to _Sclerotium rolfsii_, nematodes, and Bermuda grass.

In rice the control of grasses (particularly barnyard grass) is an important problem. Three years' results indicate that Chloro IPC is of value when applied at low rates after emergence of rice and grasses. Results in 1956 also indicate T.C.A. to be of value. The use of T.C.A., if further proved, is of particular interest since the cost would be about $2 an acre. While 2,4-D as a herbicide in rice fields is a cheap and effective method of eliminating certain broad-leaved weeds, it is dangerous to use near cotton. It has been shown that 2,4,5-T is as efficient as 2,4-D, if not more so, and is much less dangerous to nearby susceptible crops.

In sugar cane, the ratoon stunting disease is of primary importance at the present time. Experimental tests made in 1956 indicate losses of 25 to 35 per cent occur in the commercial varieties at present dominant in the Louisiana sugar cane industry. Results also indicate that treatment of seed cane with hot air at 58° C. for 8 hours will eliminate the virus causing the ratoon stunting disease. It is of interest that there will be 25,000 acres of cane from treated seed available for planting the crop in 1958. This is cane from seed cane treated in 1955 and 1956.

The production of true seed of sugar cane at Baton Rouge, La., by use of the photoperiod technique developed in 1953, again was successful with about 46,000 seedlings being produced from crosses. Also, the 100,000th sugar cane seedling from seed produced in Louisiana will be planted in the field this spring (1957) for selection in the fall of 1958. This is of particular interest, since as late as 1950 it was considered impossible to produce viable true seed of sugar cane in Louisiana. Dalapon, a new chemical, has been shown to be of value in Johnson grass and Bermuda grass control in sugarcane.

In the research program on the diseases of ornamental plants, a new disease of azaleas, which appeared in 1954 in southeast
Louisiana, has been determined definitely to be due to a species of *Colletotrichum*. It was shown that this disease can be controlled with either copper or organic fungicides. Nurserymen are already using the recommended sprays.

The rot of strawberries in wet weather has caused great losses to commercial strawberry farmers in Louisiana. A search among fungicides available indicates certain ones to be of value in reducing these losses. Storage rots of peaches were also reduced in 1956 by the pre-harvest applications of dehydroacetic acid.

A cooperative nematode project with the United States Department of Agriculture has shown in the past year or two that rather large losses are caused by nematodes in certain soil types in many crops, including corn and cotton. It was also shown that greater numbers of better developed pine seedlings could be obtained in nurseries by soil fumigation. This latter work was done in cooperation with the Louisiana State University School of Forestry.

In cotton, certain of the substituted urea herbicides can reduce hoeing costs as much as 75 per cent in wet years. Since the cost for the chemical is about $1.50 an acre, the use of such chemicals should be of considerable value. A new project has been started to develop means of controlling damping-off and soreshin, the major causes of stand failure in early cotton plantings.

**Research Projects**

A study of a Species of Pythium in Its Action on Sugar Cane. S. J. P. Chilton, T. Van der Zwet, and H. E. Wheeler.

Cause and Control of Root, Stem, Leaf, and Flower Diseases of Certain Ornamental Plants. A. G. Plakidas.

Soil-Borne Diseases of Forage and Cereal Crops in Louisiana. G. D. Lindberg.

The Control of Cucumber Anthracnose by Means Other than Foliar Fungicide Treatment. N. L. Horn, W. F. Wilson, and M. J. Giamalva.

Studies on Sugar Cane Diseases. R. J. Steib.

The Ratoon Stunting Disease of Sugar Cane. R. J. Steib.

Pathogenicity of Plant Parasitic Nematodes Occurring in Louisiana Soils. J. P. Hollis.


Fundamental Studies on Sugarcane Diseases. I. L. Forbes.

Control of Sore-Shin under Laboratory and Greenhouse Conditions. J. B. Sinclair, G. E. Wilcox, and J. A. Hendrix.

Tomato Improvement Project. J. B. Sinclair and R T. Brown.

Studies on the Kernel Smut of Rice. G. D. Lindberg.

Fungi Causing Light and Sterile Grains in Rice. G. D. Lindberg.


Weed Control by Chemicals. E. R. Stamper.

The Use of Chemicals in Rice. F. B. Baker.

Breeding of New Varieties of Sugar Cane. S. J. P. Chilton, E. Paliatseas, E. Barrett, R. D. Breaux, and P. H. Dunckelman.

Control of Fruit Rot of Strawberries. N. L. Horn.

Commercial Control of Ratoon Stunting Disease of Sugar Cane in Louisiana. S. J. P. Chilton, R. J. Steib, and H. T. Barr.

Bulletins, Circulars, and Articles in Scientific Journals


Other Articles and Mimeographed Material


Paliatseas, E. D., E. Barrett, and S. J. P. Chilton. Production of true seed of sugar cane in Louisiana. Rept. of the Dept. of Plant Pathology to the Contact Committee of the Amer. Sugar Cane League for the year 1955.


Poultry

The Poultry Industry Department is conducting investigations in the fields of nutrition, breeding, physiology, and poultry market products technology. New structures that were added to the research farm included a 30 ft. x 300 ft. broiler house, a 24 ft. x 300 ft. brooder house, a 30 ft. x 300 ft. laying house, and a cage plant housing 2,200 hens.

The research program in poultry breeding has the overall objective of evaluating the effectiveness of various breeding systems. One phase of this work is confined to the productive characteristics of hens. This work is particularly concerned with the development of highly inbred lines and the subsequent crossing of these lines. Another phase of the work deals with a study of various breeding systems in improving the broiler qualities of chickens. This study involves the use of such systems of breeding as convergent improvement, crossbreeding, and back cross-
ing. A study is also under way to determine the mode of inheritance of a condition characterized by a melanic pigmentation of the abdomen in broilers. This condition has been referred to as “blue belly.”

In the field of nutrition the research program is concerned primarily with energy and protein. Extensive investigations are being conducted on the proper energy and protein contents of broiler rations. The interrelationship of these nutrients is also being investigated. Extensive studies on amino acid supplementation of broiler rations are also under way. The effect of adding high fiber containing feeds to broiler rations is also being determined. Considerable emphasis has been placed on methods of improving the nutritive value of cottonseed meal. The efficacy of adding certain enzymes to broiler rations is being investigated.

Studies have been initiated to determine the nutritive requirements of laying hens in cages. Particular emphasis is being placed on protein and energy, although certain minerals and vitamins are also being studied.

In the field of avian physiology studies are being conducted on the causes of seasonal changes in egg quality. Hens are housed in a constant temperature room as well as in a natural environment and observations are made on eggshell quality, interior egg quality, and on certain blood constituents.

The work being conducted in market products technology involves studies on methods of cleaning market eggs. Both washing and dry cleaning are involved, and the keeping qualities of the eggs are being determined. Also, studies have been conducted on the most economical length of time to fast birds prior to slaughter. The effect of ration composition and certain ration additives on broiler carcass composition is being investigated. Chemical analyses of the carcass of broilers are made and the relationship between the ration treatment and the chemical composition of the carcass determined.

At the North Louisiana Experiment Station studies are being conducted on methods of growing out pullets and methods of managing laying birds. Broiler growth tests are being conducted to study the effect of growing the sexes separately.

At the North Louisiana Hill Farm Experiment Station performance tests are being conducted on various strains and strain crosses of hens maintained in laying cages.
Research Projects


Relative Efficiency of Convergent Improvement, Crossbreeding, and Backcrossing for the Production of Broiler Stock. W. A. Johnson.


Methods of Cleaning Market Eggs. C. C. Brunson and K. N. May.


The Possible Inheritance and Means of Elimination of Melanic Pigment found in the Internal Membranes of the Abdominal Region of Broilers. A. B. Watts, C. C. Brunson, and W. A. Johnson.


The Most Economical Length of Fasting Time Prior to Processing Chickens. C. C. Brunson and K. N. May.


Bulletins, Circulars, and Articles in Scientific Journals


Other Articles and Mimeographed Material


Rural Sociology

The Department of Rural Sociology is presently conducting research in three areas: (1) the use and potential of television in farm and home education, (2) the impact of industrial development on rural people in Louisiana, and (3) the development of the rural-urban fringe in Louisiana and its implications for the state's agriculture.

Few inventions have been more readily received and have had greater impact on the society than television. Within a few years, this medium of communications has revolutionized concepts of entertainment, advertising, and education. The Department of Rural Sociology recognized the need for a study of the implications of television for farm people. The goal of this analysis is to provide information of fundamental importance to Agricultural Extension Agents and other agricultural workers in their efforts to communicate new ideas and information to the farm people of the state. At present, the areas for study have been selected, a
schedule has been prepared, a representative sample has been chosen, and the interviews have been completed. The data from the schedules are now being processed, after which an analysis and interpretation will be made of the findings of the research.

The study which deals with the effects of industrialization on rural people centers around a wire-bound box factory which began operation approximately six years ago. Although it is generally believed that industrial development raises the levels of living of the rural people in the area, scientific studies have not been carried out to determine if this is a valid assumption and to analyze the social processes which are involved. The Department of Rural Sociology, in cooperation with the Agricultural Marketing Service, United States Department of Agriculture, is conducting an investigation to provide insight into the processes which take place when industrial development occurs in a rural area. At present, the site of the study has been selected, schedules have been prepared, the sample has been chosen, and interviewing is under way.

In Louisiana, recent decades have witnessed a vast expansion of urban population beyond the areas which have long been their legal as well as their traditional boundaries. This has resulted from, and at the same time further stimulated, the development of rapid and cheap means of transportation, the construction of an adequate system of paved highways, and the continued industrialization of the state. Louisiana has three metropolitan centers which have been encircled by rural-urban fringes of considerable magnitudes. These are New Orleans, Baton Rouge, and Shreveport. An intermingling of rural and urban people, ideas, values, and philosophies is taking place in these areas of expansion. At present, the analysis of the number, distribution, and characteristics of the people in the rural-urban fringe is nearing completion.

Research Projects

A Study of the Impact of Industrial Development on Rural People of Louisiana. (A cooperative project between the Department of Rural Sociology, Louisiana Agricultural Experiment Station, and the Agricultural Marketing Service, United States Department of Agriculture.) Paul H. Price, Harold W. Osborne of the Department of Rural Sociology, and Alvin L. Bertrand and Louis J. Ducoff, of the USDA.
Sugar Cane

Sugar Station—The Louisiana Sugar Experiment Station carries on two distinct lines of research projects. These are classified as development of new sugar cane varieties for the Louisiana sugar industry, and soil fertility projects.

The most important project, the development of new sugar cane varieties for the Louisiana sugar industry, was initiated by Director W. C. Stubbs in 1886, when importation of sugar canes from foreign countries was begun. About 1900, D. 74 and D. 95 seedlings were released to the Louisiana sugar industry, and D. 74 became one of the most important commercial canes and held that position until the decline of the “Noble” varieties, caused by a combination of diseases, occurred in the period 1919-26.

Following the release of the disease resisting hybrid sugar cane varieties known as the P.O.J.’s about 1926, this station, in cooperation with the Office of Sugar Plants Investigations, U.S.D.A., and the American Sugar Cane League of the U.S.A., has released many important commercial varieties to the industry.

The main sources of seedling varieties are the Canal Point Sugar Cane Breeding Station, in Florida, a U.S.D.A. station which
cooperates with L.S.U.; the L.S.U. Sugar Cane Breeding program based on Grand Isle and the photoperiod work of the Plant Pathology Department at L.S.U.; and foreign introductions which become available through the plant quarantine system of the U.S.D.A.

The second line of research deals with soil fertility. Two agronomic projects are under way. One deals with soil structure and is in cooperation with the Department of Agronomy, the Sugar Station handling the field phase of the work, and the Agronomy Department emphasizing the laboratory and technical phases. The other deals with the development of methods for improving the crop environment for the growth and maturity of sugar cane through the aid of agricultural chemicals.

**Outfield Sugars**—Each year sugar cane variety trials are conducted at several locations throughout the Louisiana sugar cane belt on lands of selected producers. Similar to other phases of the sugar cane variety program, these experiments are conducted in cooperation with the U. S. D. A. Sugar Cane Field Station, Houma, Louisiana, and the American Sugar Cane League, New Orleans, Louisiana. Promising experimental varieties are compared with present commercial varieties in yield and various other characteristics of economic importance. Variety recommendations based on the results obtained are issued annually.

**Research Projects**

Develop Methods for Improving the Crop Environment for the Growth and Maturity of Sugar Cane Through the Use of Agricultural Chemicals. E. C. Simon.
Outfield Sugar Cane Variety Trials. T. J. Stafford.

**Other Articles and Mimeographed Material**

MATHERNE,¹ R. J., T. J. STAFFORD, L. P. HEBERT,¹ and E. C. SIMON,² Sugar Cane Variety Recommendations for Louisiana, 1955.
STAFFORD, T. J. Outfield Sugar Cane Variety Trials. 1955.
STAFFORD, T. J. Summary of Important Varietal Information as Based on Tests Conducted in Louisiana During Recent Years.

¹U.S.D.A. Sugar Cane Field Station, Houma, Louisiana.
²Louisiana Sugar Experiment Station, Baton Rouge, Louisiana.
Veterinary Science

During the year the department moved into its new laboratory office building and also occupied the new animal quarters. These facilities permit material expansion of old projects and the initiation of new ones. In the area of infectious diseases most work has been along basic lines, while in the study of gastro-intestinal parasites, recent work has definitely been in the area of testing the application of basic knowledge.

Research is being directed toward the transmission, diagnosis and control of leptospirosis. The methods of spread from animal to animal are being studied. Wild animals in nature are being studied as to their carrier state. The efficiency of several methods of serological diagnosis are being compared. Studies are being conducted to evaluate and compare immunizing agents.

In the research on gastro-intestinal parasites of cattle, emphasis has been placed on the prevention of infection rather than on treatment of animals after the disease complex has appeared. Low level feeding of phenothiazine has been studied intensively in connection with four of the important parasites of cattle. It has been found that a small amount of this drug fed daily reduces or eliminates the infective stages of the worms. The problem, well known to the veterinarian and livestock owner, is how to get the necessary amount of phenothiazine daily into the largest possible number of animals. Management practices including pasture rotation and barn sanitation play a very important part in any control program.

Investigative work on reproductive disorders in cattle is being done on three separate, well-managed dairy herds within the University system. The results obtained will reveal the relative importance of different conditions which interfere with reproductive efficiency in well-managed dairy herds in Louisiana. Various corrective therapeutic measures are being employed on each condition encountered. These findings will be useful in recommending treatment and in determining prognoses in similar cases encountered in the future.

Tetracycline is being evaluated in the treatment of catalase positive vibrio fetus infected bulls. Untreated semen is cultured bacteriologically to detect infected animals since positive agglutination tests as employed for cows is not a reliable indicator for the bull. Tetracycline is employed locally and systematically and ef-
fectiveness determined by the bacteriological examination of untreated semen obtained after the bull has been treated. An effective agent for the treatment of infected bulls is needed.

Anaplasmosis, which is generally considered to be the most serious infectious disease of cattle in our state, is being studied from several angles. Progress has been materially impeded by the widespread occurrence of eperythrozoonosis. It has been shown that eperythrozoonosis definitely interferes with the development of anaplasmosis. Eperythrozoonosis, which is either of little consequence or has not been recognized clinically, must be eliminated from experimental animals in order to do exacting studies on anaplasmosis. Efforts will be made to adapt the anaplasmosis causative agent to the white rabbit. Work towards the development of an immunizing agent is continuing. The complement fixation test is being reviewed and studied in certain respects where its specificity has been questioned.

Studies of the blood of broilers, with particular reference to the cellular elements, infected with Newcastle disease and infectious bronchitis are in progress. The basic study is to determine if there are changes which may be of use as diagnostic aids.

The Department is cooperating with the Departments of Dairy Husbandry, Animal Industry, Agronomy, Agricultural Chemistry and Biochemistry, Bacteriology, and the Feed and Fertilizer Laboratory in the study of bloat. Characteristics of the estrus cycle of dairy cattle under Louisiana conditions are being studied jointly with the Department of Dairy Husbandry. Veterinary Science is cooperating with Poultry Industry in a project designed to more thoroughly study protein metabolism in birds. A surgical method of attaching the ureters to the lateral abdominal wall, for the collection of pure urine, has been developed and is being reported in the American Journal of Veterinary Research.

Research Projects
Breeding Disorders. R. B. Lank, T. E. Patrick, and W. T. Oglesby.
Substations

Fruit and Truck Experiment Station, Hammond

The program of the Fruit and Truck Station is primarily concerned with the problems of horticultural crops. These crops extend over a wide range of types including small fruits, vegetables, and ornamental and floricultural crops. A major portion of the work consists of the development of suitable varieties of blueberries, blackberries, and strawberries for Louisiana.

Breeding—The strawberry breeding program is in cooperation with the Department of Horticulture at Baton Rouge.

During the year, the planting of several thousand blackberry seedlings was reduced to approximately 100 selections for further observation and trial.

Thirty thousand blueberry seedlings have been grown in the field. A relatively large number of these failed to withstand high temperatures and drought under field conditions. Few have fruited, and a limited number of this group was discarded primarily because of susceptibility to mildew.

Cultural and Fertility Tests—Studies of strawberry spacing on both single and double row plantings continued to show that the greater the number of plants per acre, the larger the yields per acre, the fewer the number of plants per acre, or the greater the spacing, up to 20 or 22 inches, the larger yield per individual plant. Sources of plants being studied show very great advantages of Louisiana-grown plants over those ordered from other states. When grown in Louisiana, there was a wide difference in the yield of plants grown on an old bed known to be infested with nematodes when compared with the yield of plants grown on an area free of nematodes.

Fertility Studies—Varied fertilizer treatments involving the three major elements—nitrogen, phosphorus, and potash—for the production of strawberry plants are being used to determine the effect of these materials on the subsequent yield of strawberries. The difference in the number of plants produced by these treatments was relatively small and inconsistent. A comparison of organic and inorganic sources of nitrogen for strawberry production shows an increased yield by the organic materials over inorganic sources, with no significant difference among tung meal, cottonseed meal, and soybean meal, with the exception of the much cheaper price of the tung meal.
Variety Trials—Variety trials with cucumbers, beans, sweet corn, sweet peppers, Irish potatoes, broccoli, and cauliflower are conducted each year. The cucumber and sweet corn trials are a cooperative part of, and conducted along the lines of, the South-eastern Regional Trials. The Irish potato trials are a cooperative project with the Horticulture Department at Baton Rouge. There were no major changes in the varieties of these crops to be recommended for this area; however, several of the newer sweet corn strains look promising.

Ornamental and Floricultural Crops—A recent expansion of the research program of this station concerns the problems encountered in the maintenance and operation of a nursery. These problems are in the areas of propagation, cultural practices, fertility, plant materials, and container culture. The effect of varying rates of a complete fertilizer for general nursery field stock is being investigated. The culture of Kurume azaleas under field conditions has not proved successful owing to a very high rate of mortality. Studies with organic materials, when used with four general types of nursery plants in containers, showed slightly better results from the use of manure and compost when compared with Krillium and peat. Gravel, peat, sawdust, and tung hulls, when used as drainage, showed little or no difference as reflected by the growth and the quality of the plant material.

Excellent results have been obtained from tests in propagating Ilex Cornuta. The results of studies of various methods of propagating blueberries have been disappointing.

A number of potentially valuable ornamental trees and plants from the Bureau of Plant Introduction, as well as new selections of ornamentals, have been added to the planting for observation.

A number of camellia varieties have been added to the collection of seedlings grown at this station. They join basic material for the study of root stocks, variations, and observation and evaluation of varieties. Several very promising seedlings have been kept for further observation.

Floricultural studies consist largely of the observation of a number of varieties of Narcissus and 4 plants each of 32 varieties of roses. During the past five years, several varieties of roses have proved definitely superior for this area. There are a number of varieties which, under the system of growing used in this test, cannot be satisfactorily grown in the area.
Research Projects


Fig Variety Test. W. F. Wilson and M. J. Giamalva.


Other Articles and Mimeographed Material

North Louisiana Experiment Station, Calhoun

The North Louisiana Experiment Station has a wide program of research in several fields of agriculture, and the projects in these various fields are designed for the agriculture in north central Louisiana. The program of work includes agronomy, beef cattle, dairying, horticulture, and poultry.

Agronomy—The agronomic program consists of experiments with cotton variety and irrigation, corn variety and irrigation, corn insect control, corn-soybean rotation, and pasture observation work. The variety tests with cotton and corn are in cooperation with the Crops and Soils Department and are part of a state-wide program of testing and comparing leading varieties and new seedlings under the varied soil and climatic conditions of Louisiana. The irrigation experiment is designed to test the effect of furrow and sprinkler irrigation with and without subsoiling, on the yields of these crops. The work with corn and soybeans determines the effect of soybeans on the yield of corn when planted in combinations of two rows each. The work with pastures involves producing the best possible pasture for the dairy and beef herds, and keeping a record of production as well as pasture treatments.

Beef Cattle—The North Louisiana Experiment Station has a small herd of registered Hereford and Devon cattle which are used in a crossbreeding program between the two breeds. The program involves a comparison of the growth and development of the various progeny together with performance on standard feed test. In each breeding season an equal number of cows of both breeds are placed with a male of each breed so that line-bred and crossbred animals are obtained from both breeds, permitting a comparison of the purebred Devon calves with purebred Hereford calves and a comparison of the crossbred calves from dams of each breed. This work is in cooperation with the Animal Industry Department at the main station in Baton Rouge.

Dairy—The dairy program is designed to apply to the small dairies of the area and consists of herd management, feeding, pasture studies, and the production of replacement heifers. The work with the production herd involves various systems of feeding both concentrate and roughage, as well as a combination of pasture and hay feeding tests. Another phase of the dairy program is a study of the amount of time required to perform each of the various operations in the dairy barn in an attempt to determine which type of milking operation is most efficient for a small dairy. Data have
been collected for several years on the cost of producing replacement heifers under three different systems of feeding and management.

Horticulture—Horticulture work on the North Louisiana Experiment Station covers a wide field of activities in fruit and vegetable research and is closely coordinated with the Department of Horticulture at L. S. U. The vegetable work includes breeding projects which have resulted in the development of two new varieties of watermelon, Calhoun Sweet and Summit, and two new varieties of field peas, Calhoun Crowder and Louisiana Purchase. In addition to the breeding work the station cooperates with the Southern Regional Trials in the testing of new varieties and seedlings. Other vegetable work includes insect and disease control work with watermelons; irrigation of watermelons, sweet corn and tomatoes; fertilizer placement studies with watermelons; variety and disease resistance studies with sweet potatoes, and lettuce, and sweet corn variety tests.

Experiments with fruit are largely confined to peaches and include breeding for better adapted varieties, testing existing varieties for local adaptation, disease and insect control, orchard management, and the effects of certain chemicals on date of maturity. In addition to the above, observations are made of several varieties of strawberries, apples, and pears.

Poultry—The poultry research program is closely coordinated with the Poultry Industry Department at L. S. U., and is concerned with broiler production and management of small flocks of laying hens. The work with broilers involves growing the sexes separately as compared to hatchery run chicks. Records are kept on growth, feed efficiency, and cost of production of each of these groups in an attempt to determine whether there is any economic advantage in producing the sexes separately. The program with laying hens compares birds grown in confinement and receiving a full ration, with birds grown on range and receiving a full ration. Both of these flocks are housed in a standard laying house. The performance of these two groups is compared with birds on range on restricted feed, and birds on range on full ration and housed in a modified range shelter.

Research Projects
Corn-Soybean Test. R. S. Woodward.
Dairy Research. A. V. Davis and R. S. Woodward.
Vegetable Breeding, Variety Trials and Observation. J. C. Taylor and R. S. Woodward.

**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeoographed Material**

STATION STAFF. Comparison of Wheat and Oats for Winter Grazing.
STATION STAFF. Crop Recommendations.

**North Louisiana Hill Farm Experiment Station, Homer**

There are 1,242 acres of land in this station. The acreage is used approximately as follows: 366 acres in beef cattle pastures from which hay is also cut for dairy cattle, 225 acres in forestry, 220 acres in dairy pastures, 150 acres in undeveloped land, 100 acres in roads and building sites, 80 acres in Coastal Bermuda grass, 80 acres in row crops, and 21 acres in orchards. There are approximately 13 miles of roads bordering and traversing the farm and approximately 40 miles of fencing. The capital investment represented in this station is in excess of half a million dollars. Buildings and facilities for the technical aspects of the work represent nearly four-fifths of the total investment.

Research is conducted in agronomy, beef cattle, dairying, forestry, horticulture, poultry, and marketing.
Agronomic research includes the testing of new varieties and control of nematodes in the production of cotton, corn, oats, and sorghum. The establishment, fertilization, and management of Coastal Bermuda grass receives detailed attention in the research work, as does the comparative value of different fertilizers on various row crops, small grains, and pasture crops. Results from soil fertility studies are then used in making fertilizer recommendations for farmer soil samples which this station analyzes for five North Louisiana parishes.

Fundamental studies are being conducted in the breeding for heat tolerance in dairy cattle, with the use of Brown Swiss and Red Sindhi animals. Applied studies are also being made in feeding and managing dairy herds.

The major emphasis in forestry research is in the establishment and improvement of timber stands. The projects under study include the eradication of undesired hardwoods with chemicals, the determination of the best spacing for timber growth, and the desirability of pruning and thinning of established stands. Also included is an intensive study of the influence of nematode control on the growth of pine seedlings.

Beef cattle work is now being initiated to study some of the more pressing, winter feeding and management problems confronting the cattlemen of the hill area. These problems include high and low levels of winter feeding for beef cattle on spring and fall calving schedules as well as the creep feeding of spring- and fell-dropped calves.

In order to formulate specific fertilizer recommendations for peach orchards in various stages of maturity and under various levels of management, the Station is studying the influence of continued applications of different fertilizers on certain soil and tree characteristics. Chemical analyses of soil and plant tissue samples play an important role in the evaluation of many of these characteristics. The yield and quality of peaches produced with the different fertilizer treatments are being correlated with the various soil and tree characteristics in order to establish criteria for evaluating the nutritional status of peach orchards in the North Louisiana area.

The marketing system for agricultural products in North Louisiana has undergone considerable change in recent years as a result of changes in the agriculture of the area. An analysis is being made of the marketing system for beef cattle, dairy products, poul-
try and eggs, cotton, forest products, and peaches in order to
determine the volume handled, channels of movement to mar-
ket, handling practices, marketing costs, area of distribution, and
nature of demand. The study has brought to light a number
of problems confronting the producers of these commodities.
When the analysis is completed, it is expected to provide the basis
for further detailed study of specific problems which offer the
greatest opportunity for improvement.

A comparison of floor-managed and individually-caged-man-
aged egg laying flocks of chickens is in its third year of progress.
A new experiment is under way studying the performance of ten
crossbred lines for egg production.

Most of the work indicated in the above mentioned areas is
conducted in cooperation with one or more of the departments on
the L. S. U. campus at Baton Rouge.

**Research Projects**

Coastal Bermuda Fertility Test.  G. E. Wilcox.

A Study of the Various Strains and Varieties of Different Grasses,
Clovers, and Other Legumes for Pasture and Forage Usage.
G. E. Wilcox, D. M. Johns, C. L. Mondart, Jr., and C. R.
Owen.

Response of Sorgo to Nematode Control.  G. E. Wilcox and J. P.
Hollis.

Comparative Performances of Several Groups of Chicks Developed
from Topcross Matings.  C. O. Briles.

Corn Yields and Nutrition as Affected by Various Rates of Nitro-
gen, Phosphorus, and Potassium.  G. E. Wilcox and D. M.
Johns.

Internal Control of Cattle Grubs.  F. N. Baker.

A Comparison of High and Low Levels of Winter Feeding for Beef
Cattle on Spring and Fall Calving Schedules.  N. W. Robinson
and D. M. Johns.

Variety Testing—Sorgo, Alfalfa, Oat, Hybrid Corn and Cotton.
G. E. Wilcox.


Breeding Better Dairy Cattle for the South.  F. N. Baker.

Loblolly Pine Spacing Study.  T. Hansbrough.

Control Burned and Comparison Study of Slash and Loblolly Pine.
T. Hansbrough.
The Egg Production of Hens Kept in Laying Cages as Compared to Those Kept Under Conventional Floor Management Conditions.  C. O. Biles.


The Use of Urea Herbicidal Poisons in the Eradication of Undesirable Hardwoods.  T. Hansbrough.

Methods of Reproducing Low Quality Old-field Pine Stands.  T. Hansbrough.

Soil Fumigation for the Control of Nematodes and the Effect of Nematodes on the Survival, Growth, and Development of Loblolly Pine Seedlings.  T. Hansbrough.

The Effects of Pruning on Old-field, Pole-size, Shortleaf Pine.  T. Hansbrough.

Direct Seeding of Loblolly Pine.  T. Hansbrough.


The Effect of Soil Fumigation for Nematode Control on Oat Yields.  J. P. Hollis and D. M. Johns.

Response of Common Bermuda to Nitrogen Sources in Relation to Time and Rate of Application and Soil Fertility Level.  G. E. Wilcox and D. M. Johns.

Methods of Establishment and Fertilization of Coastal Bermuda for Grazing and Hay.  G. E. Wilcox and D. M. Johns.


The Interrelationship of Nematode Control, Fertilizer Treatment, and Plant Population on Corn Yields in Continuous Corn Rotation.  G. E. Wilcox, J. P. Hollis, and D. M. Johns.


Bulletins, Circulars, and Articles in Scientific Journals


Other Articles and Mimeographed Material

HANSBROUGH, T. Loblolly Pine Spacing Study. L. S. U. Forestry Note No. 10. 1956.

STATION STAFF. Annual Report of the North Louisiana Hill Farm Experiment Station. 1955.


Northeast Louisiana Experiment Station, St. Joseph

Agronomy—The agronomic work consists of projects in varietal testing, fertilization, and soil studies on major crops grown in northeast Louisiana. The 1956 varietal trials consisted of the following crops and the number of varieties and strains: cotton, 33; corn, 60; sorgo, 7; milo, 9; oats, 15, wheat, 4; soybeans, 72, forage legumes and grasses, 87; cover crop legumes, 6.

Fertilization studies consisted of sources, rates, and dates of application of nitrogen for cotton and corn on Sharkey clay and Commerce sandy loam soils. Depth of placement of nitrogen in combination with phosphate and potash was also tested under cotton fertilization.

Agricultural Engineering, Plant Pathology, and Entomology as Related to Agronomic Testing—Integral parts of agronomic testing at this station consisted of work not specifically labeled "Agronomy." As an example, cotton mechanization entailed three major phases: chemical weed control, chemical defoliation, and mechanical harvesting.

The chemical weed control program in cotton includes a pre-plant evaluation of a chemical to control Johnson grass, a residual replant test using Chloro IPC and Karmex DL herbicides, a date of planting herbicide test, and a test on economics of production, which included a post-emergence treatment.

Six chemical defoliants were tested at several rates and in certain combinations. The influence on grade of lint cotton from me-
chanical harvesting as associated with effects of the chemical de-
foliants is being measured. The sampling technique involved
saving a few pounds of mechanically picked cotton, removal of
new growth and removal of remaining seed cotton on a specific
number of plants.

Soil studies included tillage factors and methods, soil struc-
tures, and fungicides. Sub-soiling at 18 inches depth was com-
pared to deep breaking 12 inches to 14 inches deep, 12-inch
depth soil mixing or scarification and conventional middlebusters.
Deep breaking, conventional operation, nitrogen rates and M. alba,
annual (Hubam) were compared to each other in all combinations
as reflected in amount of seed cotton produced per acre.

The cotton insecticide program involved 6 tests: (1) commer-
cial insecticides in large plots where a 6-row, high-clearance
sprayer-duster was used; (2) a thrips control test with chemicals
either mixed with a pre-emergence herbicide or applied at the two-
leaf stage; (3) a granular experiment; (4) a Malathion-Endrin boll
weevil test; (5) a Thimet rate test; and (6) a cotton fruiting ex-
periment. Regular season applications of insecticides were main-
tained on all station cotton.

Chemical weed control in corn consisted of a pre-plant herbi-
cide to control Johnson grass, 11 pre-emergence treatments in 1
test and 9 post-emergence treatments in another test. All variety
and fertilizer tests were treated with 2, 4-D to control weeds. Sev-
enteen commercial corn varieties and Louisiana experimental strains
in a mechanical harvesting evaluation test were also treated with
2, 4-D.

The combine soybean test consisted of 21 varieties, which were
separated into four maturity groups for ease of mechanical har-
esting. Chemical herbicides as pre-emergence, post-emergence,
and pre-planting treatments were evaluated in regard to effective-
ness on weed populations and toxicity to crop plants.

A Farmall Cub tractor was equipped with 2 rollers, a spray
can rack, pump, hoses, and nozzles to apply the various herbicides.
A 2-row, quick-hitch flame cultivator was tested. A revised Pear-
son hill-drop planter was utilized for planting specific plots in or-
der to evaluate its efficiency. A Farmall C-14 cotton picker was
used to pick rank delta cotton to compare grade of lint with hand
picked cotton.

Animal Industry—Research in Animal Industry includes work
on problems of management, feeding, and marketing the spring
dropped calves. This includes the use of pastures, farm grown
grains, and roughages in a grazing and feeding program. Research is conducted on three methods of fattening feeder lambs for slaughter.

These projects are aimed at developing methods of increasing the efficiency and net income of livestock producers in the northeast section of Louisiana.

**Research Projects**

Cotton Insect and Disease Control. L. W. Sloane, S. E. Crosby, D. F. Clower, L. D. Newsom, and J. P. Hollis.
Corn Production Experiments. L. W. Sloane and L. F. Mason.
Utilization of Various Combinations of Grazing Crops, Forages, and Concentrates in a Farm Steer Beef Production Program. J. C. Carpenter, Jr., and P. B. Brown.
A Comparison of Three Methods of Fattening Lambs for Slaught-

**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**

STATION STAFF. Research Work Being Conducted at St. Joseph and Winnsboro.
STATION STAFF. Report on Winter Grazing.
STATION STAFF. Supplemental Feeding of Steers Grazing Rye Grass Pastures.
STATION STAFF. Annual Progress Report, Northeast Louisiana Ex-
periment Station.
Studies by this station emphasize the improvement of various horticultural crops through selection, breeding, spacing, fertilization, weed control, disease, and insect control tests.

Particular emphasis has been given to tomatoes, cauliflower, cabbage, shallots, Irish potatoes, bush beans, cantaloupes, garlic, pole beans, eggplant, chrysanthemums, amaryllis, citrus, miscellaneous sub-tropical shrubs and fruits, figs, blackberries, and landscaping materials.

Most of the studies are carried on in cooperation with the Horticultural Research Department, Entomology Department, and Plant Pathology Department of Louisiana State University.

Primary lines of research followed in the improvement of tomato production are in testing varieties for early high yields of large red fruits that have good shipping quality and show resistance to cracking, wind burn, and diseases such as mosaic. Studies on transmission of mosaic and possible means of control are being investigated by Dr. Jim Sinclair. Fertilizer ratios, rates and methods of application are being compared in replicated plantings at the station to determine effect on time of maturity, yield, quality, and soil changes.

Insecticides are being compared for control of insects attacking tomatoes, with emphasis on those which might meet requirements as stipulated in the Miller Bill of the Pure Food and Drug Act.

Cauliflower variety trials and time of planting studies were discontinued this past year as results have shown that July 10-August 10 is the best time of planting. Snowball A and Master were found to be two of the best early maturing varieties. They are concentrated in heading and are better adapted to July than to August planting. Snowball X (main crop) has an extended harvest season, which makes it particularly adapted to home garden planting, and it can be planted up to mid-August with good success. “Whip-tail” has been demonstrated to be due to molybdenum deficiency, and Supersnowball, Master, and A were found to be more susceptible than Snowball X, Y, and M, Stella Nova, and Helios.

Methods of irrigation are being compared to determine the effect on yield, quality, incidence of disease, etc.

Cabbage varieties developed by various cabbage breeders in the state and various seed companies are being compared for pro-
duction in a field heavily infested with fusarium yellows. Many growers tried Greenback this season and were favorably impressed with it. Limited seed supply has prevented extensive commercial testing of All Year, another dark green Round Dutch type.

Chemical weed control with shallots is being continued. Variety tests at the station and with growers in the commercial shallot producing area over the past several years have shown A57 to be superior to other varieties for early fall shallot production.

Irish potato tests are centered around those factors affecting incidence of scab. Some 500 seedlings developed by the Horticultural Department and U.S.D.A. are being screened for scab resistance under field conditions. Various sources of nitrogen are being compared to determine their effect on yield and incidence of scab. Spacing tests and source of seed studies are being continued.

The Southern Regional bush beans trial was planted again this season. Two breeding lines, B2567-1 and B2194-1-1, have been given to commercial bean growers for extensive testing this season. Variety trials are being continued, with emphasis on higher quality shipping types concentrated in harvest which will lend themselves to mechanical harvesting.

Cantaloupe breeding is continuing with emphasis on higher quality and more disease resistance, particularly to downy mildew and fruit rots. Two lines were entered in the Southern Regional trials in 1956 and are again included in trials for 1957.

Garlic studies are continuing with emphasis on size of seed piece, time of planting, and other factors which might affect splitting.

Commercial varieties of chrysanthemums are being screened for both yard and greenhouse plantings. Amaryllis selection and breeding work is being continued and clonal stocks are being increased for future cultural work. The most important lawn grasses in other areas are being tested for adaptability to growing conditions of this area.

Miscellaneous sub-tropical shrubs and fruiting plants are being screened for adaptability to this area and possible use as landscaping material in comparison with shrubs found suitable for other locations. A collection of fig varieties is being maintained and new varieties added as they become available. A bramble collection was started in 1956 as an expansion of the home fruit project.

Citrus rootstock, exocortus transmission, cold recovery, fertilizer, and variety tests are being continued. Cleopatra Mandarin

68
and Carrizo Citrange seed and seedlings were furnished several citrus growers for trial.

Container studies were started this year to determine effect of various soil mixtures on growth and root development in the container and growth following transplanting.

Black plastic cloth is being compared with pine straw as mulching material for strawberries, since no pine straw is available in the area.

**Research Projects**


Adaptation of Various Commercial Cucumber Varieties and Breeding Lines to the Growing Conditions of South Louisiana. R. T. Brown.


Improvement of Cantaloupes for South Louisiana through Breeding for Higher Quality and More Resistance to Disease. R. T. Brown.


Garlic Size of Seed Test. J. B. Schmitz.


The Adaptability of Various Grasses, Shrubs, Plants, and Vines Used in Landscaping to Plaquemines Parish Conditions. F. B. Schmitz.

Fig Variety Test. F. B. Schmitz.

Study of Hybrid Seed for Eggplant Production. F. B. Schmitz and J. C. Miller.

Improvement of Okra Varieties for Production in Louisiana. F. B. Schmitz, L. G. Jones, and J. C. Miller.

**Other Articles and Mimeographed Material**

STATION STAFF. Plaquemines Parish Experiment Station Progress Report.

**Red River Valley Experiment Station, Curtis**

The work at the Red River Valley Agricultural Experiment Station consists largely of fertilizer and variety studies on cotton, corn, soybeans, and forage crops, along with beef cattle production in relation to pastures. Work is being carried on with the feeding of beef cattle with feed grown on the farm. Various combinations of feeding practices are under study with various sources of protein.

Irrigation studies on pastures and cotton are receiving special attention since both crops are very important to the area.
Corn Studies—Commercial and experimental hybrids are checked for yield, lodging, husk, grade, and plant and ear height. The experimental hybrids include unreleased strains that look promising but require further testing. Early and medium early hybrids are included because of their value in a hogging-off program and as a source of early feed. Various spacings and plant populations at different levels of fertility are studied in relation to yield. The mechanical harvesting of corn is increasing in importance because of an increase in corn acreage and a decrease in farm labor. Therefore, the work with commercial varieties includes the checking of their adaptation to machine harvesting.

Different sources of nitrogen alone and in combination with phosphorus and potassium are studied in relation to corn yield. Various rotations of corn with cotton and winter and summer legumes are compared with respect to yield and the maintenance of soil productivity.

Nematocides from various sources are included to determine their effect on the yield of corn and in controlling nematodes.

Cotton Studies—Commercial varieties are studied from the standpoint of adaptability, yield, and mechanical picking qualities. Fertilization studies include various sources of nitrogen fertilizer with phosphorus and potassium at different rates. The effects of winter legumes as compared to fixed rates of nitrogen on yield are studied. The effect of various rotations of cotton, corn, and winter and summer legumes over a long period for soil improving purposes is being investigated.

Irrigation is becoming more popular because of recent prolonged drouths. Sprinkler and flood irrigation at different fertility levels are included to study benefits from each method.

Chemical weed control with various sources of herbicides is being evaluated and the practice compared to hand labor costs. Commercial and new insecticides are used to determine effects of controlling cotton insects.

Defoliation studies are carried on with commercial defoliants and new materials in an effort to evaluate each owing to the importance of defoliation in relation to mechanical harvesting.

Nematode studies with various nematocides that control the root knot nematode are carried on in an effort to determine the damage resulting where fields are badly infested.

Soybeans—Soybean work is conducted with commercial, U. S. D. A. Regional unreleased varieties and strains, and Louisiana
strains in an effort to determine disease and shatter resistance and yielding ability. Some work has been done with herbicides followed by flame cultivation to control weeds and grasses. Nematocide studies are conducted in an effort to increase yields by the production of more vigorous and healthy plants.

**Small Grains**—Work with oats consists of comparing commercial varieties for yield of grain, disease resistance, winter hardiness, and forage producing ability for grazing purposes. Winter hardiness and uniform rust nursery plot work is carried on in cooperation with the U. S. D. A.

Wheat varieties adapted to southern conditions are tested in connection with the commercial oat variety work for grain yield and for grazing.

The sorghum work is in cooperation with the U. S. Sugar Plant Field Station at Meridian, Mississippi, and consists of variety studies with sweet sorghum to determine yield per acre for use as silage in addition to lodging ability, sugar, and syrup per acre. The demand is increasing for sweet sorghum for silage use in dairy and beef cattle feeding.

Sudan and millet work is carried on to determine yield in relation to sandy and clay soil. These crops are ideal for summer grazing or silage use in a dairy or beef program.

Summer and winter grasses and various clovers and alfalfa are included in small-plot work to determine adaptability and forage production from the standpoint of using in a pasture program for grazing or hay. Alfalfa is grown quite extensively on heavy soil throughout the valley area for hay purposes. Varieties adapted to the area are very important, from the standpoint of maintaining a stand for several years.

**Beef Cattle**—The beef cattle program consists of up-grading commercial cows with quality registered bulls. A combination of feeding work with feed grown on the farm, winter and summer pastures, and irrigation work on summer pastures make up the high points of the livestock program. The comparison of different bulls and their offspring is being recorded, as is a comparison of fall vs spring calves to determine which will make the most profit.

Permanent summer pastures consist of common Bermuda, Coastal Bermuda, and Dallis grass. Temporary summer pastures consist of Sudan and millet and usually follow small grains that have been used for winter grazing. Replicated four-acre pastures of common Bermuda, Coastal Bermuda, and Dallis grass are stocked
according to carrying capacity of each. Irrigation work is carried on in conjunction with these pastures to determine benefits from irrigation practices.

Winter pastures consist of Kentucky 31 fescue and S-1 white clover, prairie brome grass and S-1 white clover, and Atlas 66 wheat and Singletary peas followed by Sudan grass.

Feeding work consists of wheat pastures grazed with one-half grain ration, complete balanced grain ration, stilbestrol fed orally in grain ration, stilbestrol implanted in ears of animals on grain ration, and Morea (Urea, ethyl alcohol, and molasses) with grain ration.

Research Projects

The Use of Feeder Pigs in Hogging Off Corn. W. A. Nipper and J. Y. Oakes.

A Randomized and Replicated Field Plot Test to Determine and Compare the Yield of Commercial Oat Varieties and New Strains as Made Available. J. Y. Oakes.

The Development of a Year-round Pasture Program as Related to Beef Production. J. Y. Oakes and D. R. Melville.


A Randomized and Replicated Field Plot Test to Determine and Compare the Yields of Commercial Hybrids, Open-Pollinated Varieties, and New Lines of Corn as Developed. J. Y. Oakes, D. R. Melville, and C. N. Bollich.


A Randomized and Replicated Field Plot Test to Determine and Compare the Yield of Commercial Soybean Varieties and New Lines as They Are Made Available. D. R. Melville, J. Y. Oakes, and C. N. Bollich.

A Randomized and Replicated Test of Winter Legumes Adapted to the Area Followed by Cotton to Determine Value of Each Legume Variety as a Source of Nitrogen in Producing Cotton as Compared to Comparable Amounts of Nitrate of Soda. D. R. Melville, J. Y. Oakes, and C. N. Bollich.

The Establishment and Maintenance of a Uniform Forage Crop Test to Determine the Local Adaptability and Performance of Various Strains of Grasses and Legumes. D. R. Melville, C. N. Bollich, and J. Y. Oakes.

Randomized and Replicated Small and Large Plot Tests to Determine the Effectiveness of Various Insecticides and Combinations of Insecticides for Cotton Insect Control. D. R. Melville, C. N. Bollich, and J. Y. Oakes.


Utilization of Home-grown Feed in a Livestock Feeding Program Supplemented with Different Sources of Protein. J. Y. Oakes and W. A. Nipper.

Bulletins, Circulars, and Articles in Scientific Journals


Other Articles and Mimeographed Material

STATION STAFF. Annual Progress Report, Red River Valley Agricultural Experiment Station, 1955.

Rice Experiment Station, Crowley

The production of foundation seed rice, which was started several years ago, is progressing in an accelerated manner. From the 1955 crop, 1,397 barrels of foundation seed rice of six varieties were released to 132 seed producers. Approximately 2,300 barrels were produced in 1956. Two thousand head rows of seven varieties of rice were grown in the variety repurification program.
In the program of breeding for improved varieties of rice (in cooperation with Field Crops Division, ARS, USDA) 60 crosses were made, 40 F₁ hybrids grown as material for selection and genetic studies, and the large collection of varieties and selections was maintained as parental material for future work. Forty F₂ populations, 200 bulk hybrid populations, 3,600 plant rows, and 250 blocks of plant rows of advanced selections were grown and selected. In tests for disease resistance, yield, and quality, 50 varieties were tested in drill plots, 20 in rod-row plots, and 70 in uniform regional nurseries. In addition, date-of-seeding, relation of inherited length of growing season to yield, effect of X-ray treatment, treatment for seedling blights and stem rot were studied. A detailed genetic study of 4 F₂ populations was made.

In the program for improvement of grain sorghums 200 plant rows were grown and selections made.

The pasture-rice rotation experiments were continued on an expanded scale with the initiation of the large farm scale rotation of rice, rice stubble seeded oats, and oat stubble seeded Alyce clover.

Seventy-nine varieties and strains of oats and 54 of barley were tested.

In the attempt to find crops other than those now grown in the rice area, many varieties of flax, sesame, okra, sorghum, corn, and soybeans were tested by experimental methods.

Rice fertilization experiments were carried out in five major rice producing parishes. In addition, time of application of fertilizers; spacing of fertilizers; depth of application of fertilizers; comparison of solid, liquid, and gaseous fertilizer materials; and effect of sulphur applications on alkali soil were investigated by experimental methods.

Pasture fertilization experiments testing nitrogen, phosphorus, potash, agricultural limestone, and minor elements were continued for the fourth consecutive year. An irrigation study was superimposed on this area during 1956.

The effect of fertilization on forage production was continued on stubble seeded wheat and oats. A study of effect of various applications of nitrogen as anhydrous ammonia on the yield of forage from common Bermuda was continued for the fifth year.

Three thousand pounds of foundation Louisiana S-1 white clover seed was produced and distributed to seed growers for production of registered seed.
The improvement of the economy of beef cattle production in the rice-beef cattle area of Louisiana through the recently initiated beef cattle research program was in full swing during 1956 with the initial study of efficiency of utilization of readily available and locally produced concentrates and roughages. Forty head of high-quality Hereford heifers and two high-quality registered bulls were acquired for the basis of a foundation herd. One hundred fifty uniform yearling Hereford steers were acquired for feedlot experiments, grazing experiments, and supplemental feeding experiments.

In the rice drying and storage project two separate studies of deep bed heated air drying were conducted. Static pressure loss studies were made to determine effect of bin entrances, internal and external ducts, and false floors. Three insecticide treatments were tested on rice stored in 500-bushel-capacity bins of two different types of construction.

The Rice Trainee Program, financed by the Rockefeller Foundation, provided orientation and special instruction to 67 persons, representing 31 countries, in 1956. Duration of the visits varied from one day to five months. A one-week short course in seed improvement was conducted for 14 participants from 12 countries. A fully equipped rice grading laboratory was established and put into operation in 1956.

**Research Projects**


Rockefeller Foundation Rice Trainee Program. E. A. Sonnier.

**Bulletins, Circulars, and Articles in Scientific Journals**


Other Articles and Mimeographed Material

Sonnier, E. A. General Information Pertaining to Rice Experiment Station. 1956.

Southeast Louisiana Experiment Station, Franklinton

This branch station consists of 844 acres of cutover pine land located in the heart of the New Orleans milkshed. The soils of this area fall in the general category of Coastal Plain soils having imperfect internal drainage. The land was acquired in 1944, but the experimental phase of the operation did not begin until 1948. Since that time, the research program has continued on an ever expanding basis, geared to fit the needs of the dairy farmer of Southeast Louisiana.

The work at this station revolves around the production of forages for utilization by dairy cattle.

Dairy Research Phase—The dairy herd consists of 211 females of all ages, some 100 of which are usually in milk during the winter months. Sixty per cent of these are grade Holsteins while the remaining forty per cent are registered Jersey. Each lactating animal is used in some research project sometime during each lactation. In addition, a large number of the heifer calves are used to evaluate systems of feeding and management.

A study is being made on three methods of utilizing green millet forage, namely rotational grazing, strip grazing, and green feeding. When considered from an acreage requirement and acreage production viewpoint, green feeding was the superior method of utilization. From a per-cow production viewpoint, rotational grazing was superior. The method to be selected will depend on the acreage available for planting and the availability of forage harvesting and feeding equipment. More attention to forage production management will be needed in a green feeding program if a constant source of desirable quality forage is to be continuously offered the cattle.
During the fall and winter of 1955-56 a study was made of several systems of feeding roughage for winter milk production. Oats, winter pasture of excellent quality, hay, silage, and grain were used in several combinations. All groups incorporating pastures produced about the same amount of milk per cow for the period under study. All groups incorporating pastures were materially superior to groups not incorporating pastures. The animals assigned to the pasture-average grain were the most profitable.

A study has also been initiated to determine the grain to milk ratio to feed in combination with whatever roughage supply will customarily be on hand during the several seasons of the year.

A comparative study of several systems of feeding heifer calves after they have reached the age of three months is underway. Also, several commercial milk replacers are being evaluated by calves 0-8 weeks of age.

**Agronomic Research Phase**—The agronomic phase concerns itself principally with a very comprehensive, replicated, small-plot testing procedure. A continuing evaluation of all new and established varieties and strains of forage is carried out. These include Dallis grasses, Bahia grasses, Canary grasses, millets, Sudan grasses, Johnson grass hybrids, rescue grasses, fescue grasses, cereal grains, sorghums, Bermuda grasses, red clovers, white clovers, crimson clovers, sub clovers, and alfalfas.

A comprehensive fertility program in forages is carried out with summer growing annuals, spring and summer growing perennials, winter growing annuals, and winter growing perennials. Rates, dates, methods, sources, and intervals of application of lime, nitrogen, phosphorus, and potash are employed with these crops.

Mixtures of grasses and clovers for grazing during the several seasons of the year are also under a continuing study.

Other experimental work underway includes corn yield testing, tung yield testing, and forestry projects. These projects are quite limited, however, in order that the dairy and forage phases might be more fully explored.

In addition to the experimental phase of the work, a large acreage is devoted to the production of hay, silage, and pasture for animals not in use on any research project.

Station personnel conducted 17 organized tours during the year and there were inquiries by many visitors daily.

A Farm Machinery Field Day in July was attended by about 900 persons.
Station staff members are constantly in demand for speaking engagements throughout Southeast Louisiana.

**Research Projects**

**Sorghum for Silage Yield Trial.** H. D. Ellzey and K. C. Freeman.


**A Study of the Effect of Varying Rates of Phosphate and Potash at Two Levels of Nitrogen on the Forage Yield of Winter Grazing.** O. D. Curtis and H. D. Ellzey.

**Annual Winter Growing Mixture Trial and Perennial Winter Growing Pasture Mixture Trial.** H. D. Ellzey and O. D. Curtis.

**Tung Investigation.** E. N. O'Rourke and H. D. Ellzey.

**Forage Species, Variety, and Strain Yield Testing:** Summer Growing Grasses. O. D. Curtis and H. D. Ellzey.

**Forage Species, Variety, and Strain Testing:** Winter Growing Grasses. O. D. Curtis and H. D. Ellzey.

**Forage Species, Variety, and Strain Testing:** Winter Growing and Summer Growing Legumes. O. D. Curtis and H. D. Ellzey.

**Effect of Rate of Nitrogen and Increment of Application on the Forage Yield, Protein Yield, Seasonal Yield Distribution, and Botanical Composition of several Winter Growing Crops and/or Combinations.** O. D. Curtis, H. D. Ellzey, and E. A. Epps.


**Perennial Spring and Summer Growing Pasture Mixture for Southeast Louisiana.** H. D. Ellzey and O. D. Curtis.

**Effect of Rate of Nitrogen and Increment of Application on the Forage Yield of Several Summer Growing Crops and/or Com-
binations and Several Winter Grazing Crops and/or Combinations. H. D. Ellzey and O. D. Curtis.

Effect of Milk to Grain Ration on the Milk Production and Body Weight of Mature Lactating Dairy Cattle When Fed Pasture and/or Harvested Roughage. H. D. Ellzey and T. E. Davis.


Effect of Method of Utilization on the Per Acre and Per Cow Production of Millet. H. D. Ellzey and T. E. Davis.

Other Articles and Mimeographed Material

STATION STAFF. Annual Progress Report, Southeast Louisiana Experiment Station, 1955.

STATION STAFF. Grass Silage.

STATION STAFF. Fertilizer Recommendations for Southeast Louisiana.

West Louisiana Experiment Station, DeRidder

Weather conditions at the West Louisiana Station were favorable for winter pastures, but unfavorable for summer growth due to irregular distribution of rainfall. The annual rainfall for 1956 was 47.52 inches compared with a 21-year average of 54.15 inches at DeRidder.

Summer pasture yields were below normal, while better yields were recorded for winter pastures grazed during 1955-56. The fall season was unusually favorable for establishing pastures for the 1956-57 winter season.

Grazing studies were conducted with both summer and winter pastures. These included comparative tests of different kinds of pasture mixtures of improved pasture plants. This study also included fertilized and unfertilized pastures of native range grasses. Yields on these pastures were measured in terms of pounds of beef gain per acre.

Work was continued with irrigation on summer pasture and conditions were favorable for the use of irrigation during the dry summer season.

This station is located in the cutover pine area of West Louisiana. The soils are light and erode readily when left exposed without a cover. These soils are best suited for non-row crop farming. When adequately fertilized and properly managed they produce good pastures during summer and winter months. Work at this station
continues to place emphasis on continuous grazing throughout the 12 months of the year.

The search for new strains or varieties of forage crops never ceases. New forage plants are tested each year to determine their adaptability to local conditions. These include both winter and summer growing plants.

Twenty-three strains or varieties of summer forage crops and 39 strains of winter forage plants were tested. These pasture plant varieties are planted on a well-prepared seedbed and fertilized alike. The plots are replicated four times and the yields are determined by cutting and weighing the forage.

Five fertilizer experiments were continued including a study of two sources of lime, six sources of phosphate, a rates and ratio study of a complete fertilizer, residual effect of three sources of phosphate, and a rates of rock phosphate test. Other fertilizer tests consisted of a rates of nitrate test and an organic matter test using manure with various commercial fertilizer mixtures.

A nematode project involving soil fumigation or treatment consists of measuring the extent of nematode kill in the soil and effect of treatment on yield of forage plants.

Forestry is the main enterprise in this cutover longleaf area. Millions of seedlings are being planted in the local area annually. Interest continues to grow as evidenced by the increase in planted acreage, forestry tours, and meetings.

Forestry work at this station consists of a species test including slash, longleaf, and loblolly, a test of control burning to encourage natural reseeding of longleaf, and a test to determine the influence of land preparation on the germination of natural seed fall of longleaf.

Fifteen bred Angus heifers were brought in from South Dakota for a foundation herd. These cattle will also be used along with the remainder of the herd to measure yields from pastures.

Native ewes and purebred flocks of the Corriedale and Hampshire breeds are being used in a study of crossbred lambs and in comparison of the two purebred breeds.

Much of the work at this station is carried on in close cooperation with various departments of the Experiment Station at Baton Rouge.

Research Projects


81
Grass and other Forage Crop Studies. C. L. Mondart, Jr., and J. I. Feazel.
Oat Studies. C. B. Roark, H. E. Harris, and J. I. Feazel.
Sudan and Millet Variety Test. C. B. Roark, H. E. Harris and J. I. Feazel.
Nitrogen Test. C. B. Roark.
Sheep Project. C. B. Roark and J. I. Feazel.
Forestry Project. B. A. Bateman and C. B. Roark.
Nematode Tests. J. P. Hollis and H. E. Harris.

**Bulletins, Circulars, and Articles in Scientific Journals**


**Other Articles and Mimeographed Material**


**STATION STAFF.** Annual Progress Report, West Louisiana Experiment Station.

**Iberia Livestock Experiment Farm, Jeanerette**

**Beef Cattle**—The current beef cattle breeding program was initiated in 1932. Purebred Aberdeen Angus cows and bulls and purebred Brahman cows and bulls have been used in this program. Two purebred Africander bulls were obtained later and used in an Africander-Angus crossbreeding program.

The purpose of these beef cattle breeding programs is to determine the feasibility of developing strains of cattle combining the heat tolerance and disease resistance of Indian cattle with the superior beef qualities of the British breeds.

At present there are six closed Brahman-Angus crossbred lines of approximately 20 cows each and four Africander-Angus closed crossbred lines which are somewhat smaller but it is hoped they can be brought up to comparable size. A purebred Brahman herd and a purebred Aberdeen Angus herd is being developed to provide four herds composed of 12 purebred Aberdeen Angus cows and 12
purebred Brahman cows each. Two herds are to be headed by purebred Brahman bulls and two by purebred Aberdeen Angus bulls. When sufficient Brahman-Angus and Angus-Brahman crossbred heifers have been produced they will be bred to representative bulls selected from the Brahman-Angus lines. All male calves will be castrated at weaning and fed out in record-of-performance steer feeding trials. Second generation heifers will be sold.

Approximately 25 per cent of bull calves from the crossbred lines are placed on record-of-performance feeding tests at weaning and the best performers selected as prospective herd sires. Sound heifers from the crossbred lines are retained until two years of age, then culled on a basis of weight and type. Cows are culled annually on the basis of the performance of their calves. Bulls are culled annually on the basis of performance of their calves and also on the basis of performance of their daughters.

In 1957 an experiment was initiated using representative heifers purchased locally. These heifers, averaging about seven months of age, were placed on feed at various levels both as to quantity and quality. The purpose of this study is to determine effects of different levels of nutrition on reproduction.

Dairy Cattle—The breeding program for the dairy herd has undergone some additional modifications in line with the decision of May 1955. An evaluation of the program at that time led to the elimination of a number of the Sindhi-Jersey combinations from the herd and the discontinuation of further Sindhi-Jersey matings. Another factor which greatly altered the composition of the herd was the introduction of Holstein cows from Huntley, Montana, and Beltsville, Maryland, and of some Jersey cows from Beltsville. During 1956 the Sindhi-Jersey cows and Holstein cows were artificially bred to Holstein bulls and the Jersey cows to Jersey bulls in the Dairy Improvement Center at Louisiana State University. With the close of the year the Jersey × Jersey matings were discontinued, and in the future the Jersey cows will be bred to Holstein sires.

A small group of Sindhi and ¾ Sindhi-¼ Jersey animals were selected to form a “Sindhi” herd. This herd is to be maintained separately from the project breeding herd and operated much like a beef herd. It will serve as a source of Sindhi bulls needed in other breeding projects now in operation or to be activated in the future.

Experimental data collected on the herd during the year was limited to routine monthly weights on the herd and body measurements on the Holstein sired calves presently in the herd.
Research Projects


U. S. Department of Agriculture

Bee Culture

The work of this laboratory is devoted to beekeeping problems of the Gulf States region and, primarily, to fundamental research relating to bee breeding and stock improvement, studies on the wax moth (Galleria mellonella L.), and pollination of legumes, particularly white clover.

In the field of genetics, studies to determine linkage between mutants and a series of lethal alleles with only one series showing close linkage have been largely completed. Mosaics have been found in some strains but no gynandromorphs have yet shown any biparental tissues.

Improvements in the technique of artificial insemination are still being made. Recent studies indicate that prompt initial oviposition can be induced by injecting large amounts of sperm in a single insemination. Studies on the preservation of sperm by quick freezing have shown it may be possible for strains to be preserved until needed by this method, but a practical application is not yet available.

The value of bees as pollinators of white clover has been amply demonstrated. Studies of clover pollination in the rice area where there are few competing plants indicate that fewer colonies per acre are needed than in the river valley areas where many plants are attractive to bees.

Studies on inbred and hybrid strains of bees are being continued. It has been shown that hybrid vigor, as shown by physical measurements, occurs when inbred lines are crossed. Progress in stock improvement now depends on the development of methods of testing and measuring characteristics, such as gentleness, swarming, honey production, and other factors so that definite characterization of the inbred lines can be accomplished and favorable characters combined in hybrids.

Work, in cooperation with Dr. W. H. James, of the Department of Agricultural Chemistry and Biochemistry, is continuing on the isolation of a substance in pollen which is attractive to bees.—Warren Whitcomb.
Potato Investigations in the Southeastern States

On account of climatic differences including length of day during the growing season, varieties of potatoes well adapted to one particular region may not meet the requirements of some other region. To meet these distinct requirements, the National Potato Breeding program of the United States Department of Agriculture has its work divided into geographical regions.

The purpose of the National Potato Breeding program of the United States Department of Agriculture in the Southeastern region is to cooperate with the State Agricultural Experiment Stations of the Southeastern States to establish new varieties of Irish potatoes superior to existing varieties from the standpoint of disease resistance, quality, high yield, skin color, and smoothness of shape. These objectives are attained by developing seedling varieties by means of crosses, and by devising new methods which facilitate making crosses under existing climatic conditions.

Seed from those crosses, as well as desirable seed obtained from other regional leaders, is sowed and transplanted in plots in the greenhouse in Baton Rouge. One tuber from each seedling in each progeny of a cross is saved to be planted for increase in a completely isolated plot at Crossville, Tennessee.

Tubers are selected and saved only from desirable seedlings, and are planted again for increase and further selections, at the Cumberland Plateau Agricultural Experiment Station. Plants developed from tubers of progenies bred for late blight resistance are placed in a moist chamber, maintained in the greenhouse at Baton Rouge, and are inoculated with the causal organism of the late blight disease. The plants that survive this severe attack are considered resistant. The tubers from plants developed for scab resistance are planted in the greenhouse at Baton Rouge in pots filled with vermiculite artificially infested with the causal organism of potato scab.

Tubers that fail to develop scab lesions or develop them only to a slight extent are tested later in scab infested fields. After seedlings have successfully met the requirements of disease resistance and other horticultural qualities, they are tested for adaptability to growing conditions in Louisiana, Florida, Alabama, South Carolina, and North Carolina.—Theodore P. Dykstra.
Financial Statement

L. S. U. AGRICULTURAL EXPERIMENT STATION RESEARCH FUND EXPENDITURES

Year Ended June 30, 1956

Expenditures—By Source

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Funds</td>
<td>$549,784.59</td>
</tr>
<tr>
<td>General University Sources</td>
<td>1,215,924.35</td>
</tr>
<tr>
<td>Specific State Appropriations</td>
<td>1,023,684.51</td>
</tr>
<tr>
<td>State and Private Gifts and Grants</td>
<td>99,298.45</td>
</tr>
<tr>
<td>Restricted Sales Funds</td>
<td>187,126.66</td>
</tr>
<tr>
<td>Total</td>
<td>$3,075,818.56</td>
</tr>
</tbody>
</table>

Expenditures—By Object Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Wages</td>
<td>$1,748,687.24</td>
</tr>
<tr>
<td>Other Current Expenses</td>
<td>727,952.91</td>
</tr>
<tr>
<td>Capital Outlay</td>
<td>599,178.41</td>
</tr>
<tr>
<td>Total</td>
<td>$3,075,818.56</td>
</tr>
</tbody>
</table>

Expenditures—By Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baton Rouge—University Location</td>
<td>$2,021,668.36</td>
</tr>
<tr>
<td>Branch Stations—Within Louisiana</td>
<td>1,053,023.00</td>
</tr>
<tr>
<td>Branch Stations—Outside Louisiana</td>
<td>1,127.20</td>
</tr>
<tr>
<td>Total</td>
<td>$3,075,818.56</td>
</tr>
</tbody>
</table>
Agricultural Experiment Station Staff

ADMINISTRATION

Charles W. Upp, Ph.D., Director (appointed June 1, 1956)
J. N. Efferson, Ph.D., Director (appointed as Dean, College of Agriculture, June 1, 1956)
W. G. Taggart, M.S., Director Emeritus (retired)
John J. Mikell, Ph.D., Assistant Director (appointed July 1, 1956)
I. L. Forbes, Ph.D., Assistant Director (transferred as Professor of Plant Pathology and Plant Pathologist, June 1, 1956)

Thomas E. Glaze, B.S., Assistant to the Director
Lawrence V. George, B.S., Editor
Nathalie Poirier, Personnel Secretary
Doris B. King, Secretary to the Director (appointed June 1, 1956)
Christine P. Brasher, Secretary to the Director (resigned June 27, 1956)
Margaret Drury, Accountant
Mrs. Frances S. Stoker, Librarian

STATE STATION, BATON ROUGE

AGRICULTURAL CHEMISTRY AND BIOCHEMISTRY

'E. A. Fieger, Ph.D., Biochemist; Head of Agricultural Chemistry and Biochemistry
Milton E. Bailey, M.S., Research Assistant
John Francis Christman, Ph.D., Associate Biochemist
Martha E. Hollinger, Ph.D., Associate Nutritionist
William H. James, Ph.D., Associate Agricultural Biochemist
Socrates Kaloyereas, Ph.D., Associate Food Preservationist
Jordan Grey Lee, Ph.D., Associate Biochemist
Russell T. McIntyre, Ph.D., Assistant Biochemist (resigned Oct. 24, 1956)
Arthur F. Novak, Ph.D., Associate Biochemist
Virginia Rice Williams, Ph.D., Associate Biochemist

AGRICULTURAL ECONOMICS

'B. M. Gile, Ph.D., Agricultural Economist and Head of Department
William H. Alexander, M.S., Associate Agricultural Economist
James Milton Baker, M.S., Associate Agricultural Economist (retired)
Bill Bolton, M.S., Research Associate
Alfred J. Burns, M.S., Research Associate
Joe Riley Campbell, Ph.D., Associate Agricultural Economist
Henry J. Casso, M.S., Assistant Agricultural Economist (on leave for 1 year, May 21, 1956 - May 20, 1957)
Alex Roy Edgar, M.S., Research Associate (appointed Feb. 1, 1957)
Dudley B. Frickie, M.S., Research Associate
Alvin C. Harper, M.S., Assistant Agricultural Economist
James F. Hudson, M.S., Assistant Agricultural Economist
George Joubert, Jr., M.S., Research Associate (resigned Jan. 1, 1956)
Jerry M. Law, M.S., Assistant Agricultural Economist
Morris M. Lindsey, M.S., Research Associate

87
Joseph P. Montgomery, M.S., Associate Agricultural Economist
Albert Jos. Ortego, M.S., Research Associate (appointed Feb. 1, 1957)
Homer G. Ponder, M.S., Research Associate (appointed Feb. 1, 1957)
Ewell P. Roy, Ph.D., Assistant Agricultural Economist (appointed July 1, 1956)
Fred H. Wiegmann, Ph.D., Associate Agricultural Economist
Martin D. Woodin, Ph.D., Agricultural Economist

AGRICULTURAL ENGINEERING

Harold T. Barr, M.S., Agricultural Engineer and Head of Department
Herbert E. Butler, B.S., Research Associate
W. H. Carter, M.S., Agricultural Engineer (transferred to Research July 1, 1956)
L. F. Curtis, B.S., Research Associate (transferred from Northeast La. Experiment Station effective Sept. 1, 1956)
John H. Hough, B.S., Assistant Agricultural Engineer (resigned May 30, 1956)
Mansel M. Mayeux, M.S., Associate Agricultural Engineer (appointed Aug. 1, 1956)
Wiley D. Poole, M.S., Agricultural Engineer
Carl H. Thomas, B.S., Assistant Agricultural Engineer
Finis T. Wratten, M.S., Associate Agricultural Engineer

AGRONOMY

Madison B. Sturgis, Ph.D., Agronomist and Head of Department
H. B. Brown, Ph.D., Agronomist (retired)
Robert H. Brubacher, Jr., M.S., Assistant Agronomist
David S. Byrnsite, Jr., M.S., Assistant Agronomist
C. T. Dowell, Ph.D., Agronomist (retired)
Bertran N. Driskell, Ph.D., Associate Agronomist
John P. Gray, Ph.D., Agronomist
Merlin T. Henderson, Ph.D., Agronomist
Maxwell D. Jeane, M.S., Research Associate (resigned Oct. 3, 1956)
Jack E. Jones, M.S., Assistant Agronomist
Sherman A. Lytle, B.S., Associate Soil Scientist
Lowell L. McCormick, B.S., Associate Agronomist—Outfield (located at Springhill, La., 108 11th St., S.E.)
James G. Marshall, M.S., Assistant Agronomist
Lee F. Mason, M.S., Assistant Agronomist
Roy J. Miears, M.S., Assistant Agronomist (located at Rice Experiment Station, Crowley, La.)
Clifford L. Mondart, Jr., M.S., Assistant Agronomist
Bernell E. Newman, M.S., Assistant Agronomist
Corbin R. Owen, M.S., Associate Agronomist
Wm. H. Patrick, Jr., Ph.D., Associate Agronomist
Walter J. Peevy, Ph.D., Agronomist
Ray Ricaud, B.S., Research Associate (part-time)
Ferd W. Self, M.S., Associate Agronomist
Matthias Stelly, Ph.D., Agronomist (appointed Feb. 1, 1957)
William J. Upchurch, Ph.D., Associate Agronomist
William H. Willis, Ph.D., Agronomist
Evie Fountain Young, Jr., M.S., Assistant Agronomist
ANIMAL INDUSTRY

'George L. Robertson, Ph.D., Animal Husbandman and Head of Department
Joseph E. Bertrand, M.S., Research Associate (resigned June 30, 1956)
Ralph F. Boulware, Ph.D., Research Associate (appointed Feb. 4, 1957)
'Paul B. Brown, Ph.D., Associate Animal Husbandman
'R. M. Crown, M.S., Associate Animal Husbandman
'Richard A. Damon, Jr., Ph.D., Associate Animal Husbandman
'T. M. DeRouen, M.S., Assistant Animal Husbandman
'Samuel L. Hansard, Ph.D., Animal Husbandman (appointed Feb. 15, 1957)
'Swayze E. McCraine, M.S., Associate Animal Husbandman
'Clifton E. Singletary, M.S., Assistant Animal Husbandman

Dairy

'Jennings B. Frye, Jr., Ph.D., Dairy Husbandman and Head of Department
James Warren Abadie, B.S., Research Assistant (appointed Dec. 1, 1956)
'Cecil Branton, Ph.D., Associate Dairy Husbandman
Charles Roy Clark, B.S., Research Assistant (appointed Feb. 1, 1957, resigned March 11, 1957)
'Alcee J. Gelpi, Jr., M.S., Associate Dairy Technologist
'James Edward Johnston, Ph.D., Associate Dairy Husbandman
George D. Miller, M.S., Research Associate
Ernest Byron Morgan, M.S., Research Associate (appointed Aug. 1, 1956)
Bobby T. Parham, B.S., Research Associate (resigned Aug. 27, 1956)
'Thomas E. Patrick, Ph.D., Associate Dairy Husbandman
'Louis L. Rusoff, Ph.D., Dairy Nutritionist
Gene Theo. Schrader, B.S., Research Assistant
'Edward J. Stone, M.S., Assistant Dairy Husbandman
Jeffrey J. Vizinat, B.S., Research Associate (resigned July 16, 1956)

ENTOMOLOGY

L. Dale Newsom, Ph.D., Entomologist and Head of Department of Entomology Research
James R. Brazzell, M.S., Assistant Entomologist
Philip S. Calahan, M.S., Assistant Entomologist
Dan F. Clower, Ph.D., Assistant Entomologist
Emile D. Conciennie, B.S., Research Associate (located at Centreville, La.)
Alvan L. Dugas, M.S., Entomologist (resigned Dec. 19, 1956)
Ernest H. Floyd, M.S., Associate Entomologist
Edmon J. Kantack, Ph.D., Assistant Entomologist
Abe D. Oliver, M.S., Assistant Entomologist
John S. Roussel, Ph.D., Associate Entomologist
Lonnie M. Sibley, M.S., Research Associate (resigned June 4, 1956)
C. Egan Smith, M.S., Entomologist (retired)

FERTILIZER AND FEEDSTUFFS LABORATORY

Ernest A. Epps, Jr., M.S., Chief Chemist and Head of Department
Hugh C. Austin, Jr., B.S., Assistant Chemist
Frances L. Bonner, M.S., Associate Chemist
William P. Denson, B.S., Associate Chemist
Jesse L. Farr, M.S., Assistant Chemist (retired)
Joseph George Kowalczuk, B.S., Assistant Chemist

89
John B. McDevitt, B.S., Assistant Chemist
Clayton C. Moreland, B.S., Associate Chemist
John W. Torbert, B.S., Assistant Chemist

SCHOOL OF FORESTRY

'Paul Y. Burns, Ph.D., Forester and Director of School of Forestry
'Martin B. Applequist, M.F., Assistant Forester (returned from sabbatical leave Sept. 16, 1956)
'Bryant A. Bateman, Ph.D., Forester
'Charles B. Briscoe, M.F., Assistant Forester
James L. Chamberlain, M.S., Research Associate (located at Rockefeller Wildlife Refuge, Grand Chenier, Louisiana)
'A. Bigler Crow, M.F., Associate Forester
'Leslie L. Glasgow, M.S., Assistant Forester
'Thomas Hansbrough, B.S., Assistant Forester (returned to North La. Hill Farm Experiment Station, Sept. 16, 1956)
'Ralph W. Hayes, M.F., Forester
'William C. Hopkins, M.F., Associate Forester
'Robert W. McDermid, M.F., Associate Forester (on sabbatical leave, Sept. 15, 1956-May 31, 1957)

HOME ECONOMICS

'Clara W. Tucker, Ph.D., Home Economist and Head of Department
Sally W. Babin, B.S., Research Assistant
Anne B. Bergeron, B.S., Research Assistant (resigned March 2, 1957)
'Delores J. Comeaux, B.S., Research Associate (appointed Nov. 12, 1956)
'Etta Lucille Finley, M.A., Assistant Home Economist
Frances C. Jones, B.S., Research Assistant (appointed Jan. 8, 1957)
Lavon A. McCollough, M.S., Assistant Home Economist (resigned Sept. 30, 1956, re-appointed March 6, 1957)
'Laureame C. McBryde, M.S., Research Associate
Ruth I. Morrison, Ph.D., Associate Home Economist (resigned June 30, 1956, re-appointed part-time Feb. 11, 1957)
Ellafied B. Quantrill, M.S., Research Associate (appointed Oct. 15, 1956)
Merrel M. Rhodes, B.S., Research Assistant
Marie Skellenger, M.S., Assistant Home Economist
Ruth K. Stockdale, B.S., Research Assistant (appointed Aug. 24, 1956)

HORTICULTURAL RESEARCH

'Julian C. Miller, Ph.D., Horticulturist and Head of Horticultural Research Department
Joseph Robert Barry, Jr., M.S., Assistant Horticulturist (located at Sweet Potato Research Center, Chase, La.; appointed Jan. 2, 1957)
Claude S. Blackwell, B.S., Research Assistant (appointed Feb. 1, 1957)
James F. Fontenot, M.S., Assistant Horticulturist
'Richard H. Hanchey, Ph.D., Horticulturist
P. Lynwood Hawthorne, M.S., Associate Horticulturist
Teme P. Hernandez, Ph.D., Associate Horticulturist (transferred to State Station Aug. 1, 1956)
Travis P. Hernandez, M.S., Assistant Horticulturist (In charge, Sweet Potato Research Center, Chase, La., Aug. 1, 1956)
Lloyd G. Jones, Ph.D., Associate Horticulturist
William Duke Kimbrough, Ph.D., Horticulturist
John R. King, Ph.D., Associate Horticulturist (on 1 year's leave, without pay, Nov. 29, 1956-Nov. 29, 1957)
John J. Mikell, Ph.D., Horticulturist (appointed as Assistant Director of Agricultural Experiment Station, effective July 1, 1956)
Donald W. Newsom, Ph.D., Associate Horticulturist (appointed March 1, 1957)
Donald Y. Perkins, Ph.D., Associate Horticulturist
TE Pope, BS Research Assistant (appointed June 1, 1956; temporary)
William A. Sistrunk, M.S., Assistant Horticulturist (on leave of absence, without pay, July 20, 1956-June 30, 1957)

PLANT PATHOLOGY
'S. J. P. Chilton, Ph.D., Plant Pathologist and Head of Department
John Bee Baker, M.S., Assistant Plant Pathologist
Richard D. Breaux, Ph.D., Assistant Plant Pathologist
Arthur R. Colmer, Ph.D., Bacteriologist
Preston H. Dunckelman, M.S., Assistant Plant Pathologist
Claude W. Edgerton, Ph.D., Plant Pathologist (retired)
Irvin L. Forbes, Ph.D., (transferred from Assistant Director of Agricultural Experiment Station to Professor of Plant Pathology and Plant Pathologist, June 1, 1956)
John P. Hollis, Ph.D., Assistant Plant Pathologist
Norman L. Horn, Ph.D., Assistant Plant Pathologist
George Donald Lindberg, Ph.D., Assistant Plant Pathologist
Weston J. Martin, Ph.D., Plant Pathologist
Percy J. Mills, M.S., Assistant Plant Pathologist
Elias D. Paliatseas, Ph.D., Assistant Plant Pathologist
Antonios G. Plakidas, Ph.D., Plant Pathologist
Walter K. Porter, Jr., Ph.D., Assistant Plant Pathologist
James Burton Sinclair, Ph.D., Assistant Plant Pathologist (appointed April 3, 1956)
Ernest R. Stamper, M.S., Assistant Plant Pathologist
Rene J. Steib, Ph.D., Associate Plant Pathologist
Eugene C. Tims, Ph.D., Plant Pathologist

POULTRY
Alva Burl Watts, Ph.D., Poultry Husbandman and Head of Department
Clayton C. Brunson, Ph.D., Assistant Poultry Husbandman
Buster Hall Davis, M.S., Research Associate (resigned June 30, 1956)
Aubrey C. Everett, M.S., Research Associate (part-time; resigned June 30, 1956)
William A. Johnson, Ph.D., Associate Poultry Husbandman
Kenneth N. May, M.S., Research Associate (resigned June 30, 1956)
Benjamin A. Tower, M.S., Associate Poultry Husbandman
Walter S. Wilkinson, Ph.D., Associate Poultry Husbandman
Rural Sociology

Homer L. Hitt, Ph.D., Rural Sociologist and Head of Department
Alvin L. Bertrand, Ph.D., Rural Sociologist (on leave, without pay, Feb. 11, 1957-June 30, 1958)
Harold W. Osborne, M.A., Research Associate (appointed November 1, 1956; temporary)
Paul H. Price, Ph.D., Associate Rural Sociologist

Sugar Station
Edwin C. Simon, M.S., Agronomist and Head of Sugar Station

Outfield Sugars
Thomas J. Stafford, Ph.D., Assistant Agronomist
Claude B. Gouaux, B.S., Agronomist (retired; P.O. Box 226, Lafayette, La.)

Veterinary Science
William T. Oglesby, D.V.M., Veterinarian and Head of Department
Joe M. Dixon, D.V.M., Assistant Veterinarian
Lon E. Foote, D.V.M., Assistant Veterinarian
Paul Henderson, B.S., Research Assistant
Harold L. Hurst, D.V.M., Ph.D., Associate Veterinarian (appointed Aug. 1, 1956)
Betsy B. Knierien, B.S., Research Assistant (appointed Jan. 2, 1957)
Robert B. Lank, D.V.M., Veterinarian
Helen E. Levy, B.S., Research Associate
Roy L. Mayhew, Ph.D., Parasitologist
Grover C. Miller, M.S., Research Associate (appointed June 15, 1956)
Earl E. Roth, D.V.M., Assistant Veterinarian (appointed June 1, 1956)
Betty Johnson Torbert, B.S., Research Associate

Substations

Fruit and Truck Experiment Station, Hammond
Walter F. Wilson, Jr., M.S., Horticulturist and Superintendent of Station
Henry G. Barwood, M.S., Assistant Horticulturist (resigned July 31, 1956)
Mike J. Giamalva, M.S., Assistant Horticulturist (on sabbatical leave, Sept. 1, 1956-Aug. 31, 1957)
William A. Poillion, M.S., Research Associate in Horticulture (appointed Sept. 1, 1956)

North Louisiana Experiment Station, Calhoun
Ralph S. Woodward, M.S., Associate Horticulturist and Superintendent of Station
Arthur V. Davis, M.S., Assistant Animal Husbandman
James L. Heath, Jr., B.S., Assistant Animal Husbandman
John C. Taylor, M.S., Assistant Horticulturist

North Louisiana Hill Farm Experiment Station, Homer
Dawson M. Johns, M.S., Associate Agronomist and Superintendent of Station
Forest N. Baker, Ph.D., Assistant Dairy Husbandman
Connelly O. Briles, Ph.D., Assistant Poultry Husbandman (resigned March 18, 1957)
Thomas Hansbrough, B.S., Assistant Forester (returned to Station Sept. 16, 1956)
Joseph Lloyd Keogh, Ph.D., Assistant Soil Chemist (resigned Feb. 1, 1957)
Niels W. Robinson, M.S., Assistant Animal Husbandman (appointed October 26, 1956)
Darrell A. Russel, Ph.D., Assistant Soil Chemist
James Warren Vittetoe, B.S., Research Assistant in Marketing
Gerald E. Wilcox, Ph.D., Assistant Agronomist
Robert E. Wright, M.S., Assistant Horticulturist (termination of appointment, July 1, 1956)

Northeast Louisiana Experiment Station, St. Joseph

John A. Hendrix, M.S., Associate Agronomist and Superintendent of Station
John C. Carpenter, Jr., M.S., Assistant Animal Husbandman
L. F. Curtis, B.S., Research Associate in Agricultural Engineering (transferred to Agricultural Engineering, State Station, Sept. 1, 1956)
Christopher B. Haddon, B.S., Agronomist Emeritus (retired)
Sherman A. Phillips, B.S., Assistant Agronomist (on sabbatical leave, Oct. 15, 1956, April 13, 1957)
LeGrande W. Sloane, M.S., Assistant Agronomist
John David Walters, M.S., Research Associate in Agronomy (appointed Jan. 2, 1957)

Plaquemines Parish Experiment Station, Route 1, Port Sulphur
Ralph T. Brown, M.S., Associate Horticulturist and Superintendent of Station
Frederick B. Schmitz, M.S., Assistant Horticulturist

Red River Valley Experiment Station, P. O. Box 5008, Bossier City
Jared Y. Oakes, M.S., Agronomist and Superintendent of Station
Charles N. Bollich, B.S., Research Associate in Agronomy
David R. Melville, B.S., Assistant Agronomist
Weldon A. Nipper, M.S., Assistant Animal Husbandman

Rice Experiment Station, Crowley
Rufus K. Walker, M.S., Agronomist and Superintendent of Station
David E. Black, B.S., Assistant Agronomist
Edwin E. Goodwin, M.S., Assistant Animal Husbandman
Austin T. Harrell, B.S., Assistant Agronomist
Earl A. Sonnier, B.S., Foreign Trainee Supervisor
Richard P. Walker, B.S., Assistant Agricultural Engineer

Southeast Louisiana Dairy and Livestock Experiment Station, Franklinton
H. DeWitt Ellzey, Jr., M.S., Associate Agronomist and Superintendent of Station
Olen D. Curtis, M.S., Research Associate in Agronomy
Thomas E. Davis, B.S., Research Assistant in Dairying
Buck Green, M.S., Research Associate in Dairying (on military leave of absence, July 3, 1955-July 4, 1958)

WEST LOUISIANA EXPERIMENT STATION, DERIDDER

Cecil B. Roark, M.S., Associate Agronomist and Superintendent of Station
John Irvin Feazel, M.S., Research Associate in Animal Industry (appointed June 16, 1956)
Harold E. Harris, B.S., Research Associate in Agronomy (on sabbatical leave, October 10, 1956-April 9, 1957)
Archie H. McDaniel, M.S., Assistant Animal Husbandman (resigned Sept. 28, 1956)

IBERIA LIVESTOCK EXPERIMENT FARM, JEANERETTE

Charles E. Hyde, M.S., Research Assistant in Dairy Husbandry

UNITED STATES DEPARTMENT OF AGRICULTURE
(Located at State Station, Baton Rouge, La.)

Robert W. Burrell, B.S., Entomologist
Clayton C. Cantwell, B.S., Apiculturist
James Covington, M.S., Agent, Soil Scientist (appointed June 18, 1956)
Theodore P. Dykstra, Ph.D., Senior Pathologist
Max J. Fielding, B.S., Associate Nematologist (transferred Aug. 15, 1956)
R. C. Gaines, B.S., Entomologist (transferred to Agricultural Experiment Station July 17, 1956)
Zane F. Lund, M.S., Agent (Soil Scientist)
Otto Mackensen, Ph.D., Apiculturist
David C. Neal, Ph.D., Senior Pathologist
Everett Oertel, Ph.D., Apiculturist
William C. Roberts, Ph.D., Apiculturist
Irwin L. Saveson, B.S., Drainage Engineer
Hugo Stoneberg, M.S., Agronomist
Stephen Taber, B.S., Apiculturist
Warren Whitcomb, Jr., Ph.D., Apiculturist in Charge
Leigh S. Whitlock, B.A., Agent

(Located at Rice Experiment Station, Crowley, La.)

Nelson E. Jodon, M.S., Agronomist

(Located at Iberia Livestock Experiment Farm, Jeanerette, La.)

S. L. Cathcart, M.S., Dairy Husbandman
E. H. Vernon, Ph.D., Animal Husbandman

*Part-time teaching.*