

THE AGRICULTURAL EXPERIMENT STATION SYSTEM OF AUBURN UNIVERSITY

Historical:

The Morrill Act of 1862 donated public lands to the several states and territories for providing colleges for the benefit of agriculture and the mechanic arts. According to this Act the leading object of the Land-Grant Colleges was to teach such branches of learning as are related to agriculture and mechanic arts without excluding other sciences and classical studies and including military tactics. In 1868 Alabama accepted this Act and appointed a commission to sell the land script. In 1872 the Alabama Agricultural and Mechanical College was established by the State Legislature at Auburn in buildings and on land which had been donated by the Alabama Conference of the Methodist Episcopal Church, South. The name was changed to the Alabama Polytechnic Institute in 1899. On January 1, 1960, the name was changed to Auburn University.

President Tichenor, the first president of the new A & M College, was also the first agricultural teacher. He was authorized by the Board of Trustees to devote his full time to the administration of the college and the teaching of agriculture.

In 1873, 75 acres of land were obtained for use in teaching agriculture. Agricultural teachers soon recognized the need for more information than was available in the limited number of books and other printed matter at their disposal. The teachers were confronted with questions on crop production that could not be answered. *Thus, the need for practical experiments became evident, and in 1883 the State Legislature appropriated the funds from a fertilizer tax for the establishment and maintenance of an Agricultural Experiment Station and State Chemistry Laboratory at Auburn. Four years later, in 1887, the Federal Government recognized that agricultural problems were regional or national in scope rather than being localized within states. Therefore, the Hatch Act was passed which provided for the establishment of a "department to be known and designated an agricultural experiment station" at each Land-Grant College. This Act appropriated \$15,000 per year to each Experiment Station and was to be used -

"---to conduct original researches or verify experiment on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States ---"

In 1907, the Congress of the United States passed the Adams Act which appropriated an additional \$15,000 per year to each Experiment Station for the further support of agricultural research.

In 1911, the State Legislature passed the Local Experiment Law appropriating \$27,000 per year to the Agricultural Experiment Station of the Alabama Polytechnic

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Institute for support of research on fertilizer requirements of various soils, boll weevil and other insect control, for plant disease investigations, for plant breeding, for work in agricultural engineering, horticulture and animal husbandry, and for agricultural extension. This made possible the conducting of field experiments in many parts of the State. Much of this work was done on privately owned and operated farms, but in a few instances fields were leased and managed by Experiment Station personnel.

In 1919, the State Legislature increased the appropriation to the Agricultural Experiment Station by \$7,500 per year. This money was used to support research at the main station at Auburn.

In 1925, the Congress of the United States passed the Purnell Act which appropriated an additional \$60,000 to each Experiment Station for "----paying the necessary expenses of conducting investigations or making experiments bearing directly on the production, manufacture, preparation, use, distribution and marketing of agricultural products----"

The State Legislature, in 1927, provided for the establishment of five Substations, one in each of the major soil types of the State and for a maximum of ten Experiment Fields on the less extensive soil types. Following this, substations were established on Sand Mountain at Crossville, in the Tennessee Valley at Belle Mina, in the Black Belt at Marion Junction, on the Gulf Coast at Fairhope and in the Wiregrass at Headland, Alabama. Experiment Fields were established at Alexandria, Aliceville, Tuskegee, Prattville, Monroeville and Brewton.

In 1935, the Congress of the United States passed the Bankhead-Jones Act which appropriated money to the State Experiment Stations for the support of agricultural research. The amounts appropriated to the various States were determined by a formula which took into account the percentage of the States' population that lived on farms.

In 1943 and 1945, the State Legislature provided for the establishment of five additional Substations three of which were located in the Upper Coastal Plain at Winfield, in the Piedmont at Camp Hill and in the Lower Coastal Plain at Camden. The two remaining Substations were to be devoted to research on horticultural crops and were located in Chilton County near Thorsby and in Cullman County near Cullman.

In 1946, the Congress of the United States passed the Research and Marketing Act which came to be known as the Amended Bankhead-Jones Act. Several appropriations have been made under this Act and the money is distributed according to a formula.

In 1955, the Congress of the United States passed a bill which amended the Hatch Act to include all Federal Grants to the States and Territories for support of agricultural research. The passage of this Act, Public Law 532, did not change the amount of money appropriated to the States and Territories. It simply consolidated into one law all of the previous Acts which made money available to the States and Territories for the support of research in agriculture.

Present Organization:

The Agricultural Experiment Station system consists of the Main Station at Auburn and twenty-three outlying units (see attached map). It is administered

by a Director who is responsible to the President of the Auburn University. The Specialists in the various fields are located at Auburn, but many of them supervise experiments at one or more of the outlying units. Although most of the Substations have some laboratory equipment, the main laboratories are located at Auburn and analyses of soils and plants are done in the main laboratories. Practically all of the basic studies in the various fields are done in Auburn.

For administrative purposes the Experiment Station Staff at Auburn is organized into the following subject matter Departments: Agricultural Economics, Agricultural Engineering, Agronomy and Soils, Animal Husbandry and Nutrition, Botany and Plant Pathology, Dairy Husbandry, Forestry, Horticulture, Poultry Husbandry, Publications and Zoology-Entomology. In addition to these, there are the Departments of Animal Disease Research which is cooperative with the School of Veterinary Medicine and Home Economics Research which is cooperative with the School of Home Economics. The Head of each Department, except for Publications, Animal Disease Research and Home Economics Research, is jointly employed by the Experiment Station and the School of Agriculture and is responsible to the Director for the administration of both the teaching and research activities of his Department. Many of the members of the staff are also jointly employed and do some teaching and some research.

The Substations are operated by a Superintendent who is administratively responsible to the Director. At each Substation, there is either one or two Assistant Superintendents.

The Experiment Fields are operated by the Department of Agronomy and Soils. One member of the Staff devotes full time to this work. There are three Field Superintendents who report to him.

The Forestry Units are operated by the Department of Forestry. A Forester and an Assistant Forester are located at the Fayette Experiment Forest, but there is no personnel at the other Forestry Units.

The Foundation Seed Stocks Farm at Thorsby and the Plant Breeding Unit at Tallassee are operated by the Department of Agronomy and Soils. A college graduate is in charge of the work at each location.

The Ornamental Horticulture Field Station at Spring Hill is operated by a Plant Pathologist who is responsible to the Director.

The work of the Experiment Station:

Although the Agricultural Experiment Station does some educational work through the release of bulletins and other publications, radio and television programs, personal appearances of staff members and by conducting tours of laboratories and field plots for the benefit of farmers and others, its primary responsibility is conducting research on agricultural problems.

The term "research" is difficult to define. It means different things to different people. The historian does research when he searches libraries and personal papers for more information about a particular event or a particular man. The manager of a business does research when he mails a questionnaire to his customers to determine their wants and needs. The chemist does research when

he determines by experimentation the properties of a new or little-known compound. In each case it is an organized search for knowledge rather than a hit-or-miss method of learning new things.

Agricultural research may be defined as "A planned and organized search for knowledge on questions relating to the production, harvesting, utilization, or marketing of agricultural products." Such a definition covers a multitude of activities by a host of scientists trained in many different fields.

Efficient production of plants or animals is dependent upon the availability of improved varieties or breeds in which superior germ plasm has been concentrated. Geneticists, cytologists, and plant and animal breeders make their contribution to this problem by studying the behavior of nuclei, chromosomes and genes during the processes of segregation and recombination. The work of these scientists results in large numbers of plants or animals that differ from each other in one or more characteristics. The question of which is superior under farm conditions can be answered only by exhaustive experiments in which the behavior of each is noted under conditions where the environment is controlled as much as possible. This requires the services of specialists in other sciences. Their susceptibility or resistance to diseases, insects, and parasites must be determined. Since the behavior of these pests is governed by: (1) genetic factors within the pest themselves, (2) morphological or physiological characteristics of the host plant or animal, and (3) environmental factors that prevail during the time that the pests are in contact with the hosts, it is necessary to determine by research methods the destructive potential of the various pests before the applied research of testing the resistance of new varieties or breeds can be initiated.

Determining resistance to pests is only one phase of the testing program. In the case of plants, their yielding capacity must be determined and this is influenced by many different factors including such things as cold resistance, drought resistance, ability to compete with other plants for soil moisture and minerals, and the ability to utilize solar energy in the manufacture of organic compounds. The designing of tests to answer these questions is dependent upon the results of basic research in plant physiology, soil chemistry, and ecology. Finally, methods of planting, fertilizing, and cultivating must be developed that will combine in the most efficient manner possible the capabilities of the plant, and the power, soil and human resources available on the farm.

The screening process by which superior lines of livestock are identified is equally complex. The final question to be answered is the efficiency with which they utilize feed to produce meat, milk, butter, eggs, wool, etc. This, however, is governed by such factors as chemical composition of feed, rate and method of feeding, environment in which the animal lives, and the genetics of the animal itself. Answers to these kind of questions are dependent upon the researches of biochemists, nutritionists, and physiologists. As is true with plants, the identification of superior animals is only the first step. After these are found, the animal husbandman must determine by experimental methods the most economical combination of management factors that will utilize to the fullest extent the productive potential of the animal.

Most farm products must be processed in some way before reaching the consumer. Included in agricultural research are studies on such problems as: conversion of fruits into juice, jelly or jam; methods of cooling and packaging milk; curing, cutting, grinding, and packaging meat; and converting trees into building materials

or paper. The search for new uses for agricultural products is a never-ending job for research workers. From work of this kind has come oleomargarine as a substitute for butter, fiber board from crushed sugar cane stalks, fireproof cotton fabrics, frozen citrus concentrate, and a host of other new products or new uses for old products. Much of this research has been done by the organic chemist or by research teams composed of chemists, engineers, and specialists from various fields of agriculture.

Marketing research in agriculture involves studies to determine the wants and needs of the consumer, the factors that influence the consumer in making a choice between two or more products, charting the routes taken by agricultural products as they move through marketing and distributing channels, making cost analysis of the various steps of marketing, and studies of ways of reducing the cost of marketing.

Agricultural research yields information, but it does not create wealth. It is only when it is used that wealth is created. Alabama farmers have used research information, however, to increase their income and to reduce the drudgery of farm work. The use of research results increased average cotton yields from less than 200 pounds of lint per acre in 1930 to approximately 300 pounds per acre at the present. Research in poultry nutrition and in poultry breeding has gradually reduced the amount of feed required per pound of gain in broilers and today it is possible to produce more than 40 pounds of broilers from each 100 pounds of feed. In addition to this saving in feed, the quality of the meat is better than that of a few years ago. A few years ago it required more than 30 hours of labor to produce, dig, shake, stack, and pick an acre of peanuts. Research on methods of mechanization showed how this could be reduced to as little as six hours. These few examples illustrate how the use of research information makes farm life more pleasant, increases income to farmers, and provides the consumer with an improved product at a lower price.

Sources of Financial Support for the Agricultural Experiment Station System:

There are four main sources of funds for the support of the agricultural research program. These include:

- (1) State Appropriations - These appropriations are made every two years as a part of the total appropriation to Auburn University, but certain sums are specified for specific purposes. For example, the amount that each Substation and the Main Station at Auburn is to receive is specified. There are certain other activities that receive "earmarked" appropriations. These funds are used to pay salaries, wages, travel expenses, purchase machinery or equipment, buy fertilizer, seed and livestock and to pay other expenses incurred in doing research.
- (2) Federal Grants - These funds made available under the Amended Hatch Act mentioned earlier, must be used to support projects which have been approved in Washington by the Experiment Station Division of the Agricultural Research Service which acts for the Secretary of Agriculture.
- (3) Grants and Donations - These are made by various organizations for the support of specific research projects. Quite often

these grants are made for the support of research on a specific question in which the company has a direct interest. Grants are also made by such organizations as the Public Health Service and the National Cancer Institute for the support of projects on the relation of nutrition to health or the control of insects. Other organizations such as the Ford Foundation and the Rockefeller Foundation sometimes make grants to the Experiment Stations for the support of projects where the needs for personnel or laboratory equipment cannot be supplied from appropriated funds.

- (4) Sales - These funds include the income received from the sale of cotton and other crops, from livestock and livestock products including milk, eggs and wool, and from the sale of timber. These items are produced during the course of research on the crops, livestock and forestry and according to State Law, the money received from the sale of these products must be used for support of research at the place where the items are produced. All funds are handled by the Auburn Business Office. Income from all sources is deposited in the University's account and expenditures are made only after being approved by the President and the Treasurer.

The AGRICULTURAL EXPERIMENT STATION SYSTEM
of the ALABAMA POLYTECHNIC INSTITUTE

