

History  
of the  
Piedmont Substation  
of the  
Agricultural  
Experiment Station  
of  
Auburn University

1945-1973

AGRICULTURAL EXPERIMENT STATION / AUBURN UNIVERSITY  
R. DENNIS ROUSE, Director AUBURN, ALABAMA



HISTORY OF THE PIEDMONT SUBSTATION  
of the  
AGRICULTURAL EXPERIMENT STATION SYSTEM  
of  
AUBURN UNIVERSITY  
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E. L. Mayton

The Piedmont Substation, authorized by the 1943 Alabama Legislature, was established in 1945 near Camp Hill in Tallapoosa County. The station is operated to serve the Piedmont Soil Area of Alabama, which is comprised of the following counties: Cleburne, Clay, Coosa, Chambers, and Randolph, the greater part of Tallapoosa, the northern half of Lee, and smaller areas in Elmore, Chilton, Shelby, and Talladega.

Several counties were asked to submit sites for the station. Land sites in Clay, Chambers, Coosa, Randolph, and Tallapoosa were investigated by Dean M. J. Funchess or his representatives. Dean Funchess selected the Tallapoosa site in 1944.

Tallapoosa County purchased the land, obtained the proper title, and deeded the land to the Alabama Polytechnic Institute (Auburn University) for use by the Agricultural Experiment Station. The site chosen was under 16 different ownerships, which created some difficulty in obtaining all the area submitted. The title to enough of the land was obtained by January 1945 so that the newly appointed superintendent, E. L. Mayton, moved to Camp Hill on January 17, 1945.

Two of the tracts of land submitted by the county were obtained by condemnation procedure in 1945, bringing the total acreage of the substation to 1,409.

It was necessary for the superintendent to live in a rented house in Camp Hill until the fall of 1948 when the residence on the station was completed.

THE PIEDMONT SOIL AREA

The Piedmont Soil Region, considered the oldest soil in the United States, extends from central east Alabama northeastward to New Jersey. The Alabama portion of this soil area was settled in the half century following the Battle of Horseshoe Bend on the Tallapoosa River during the War of 1812.

Cotton and corn were the principal crops during the region's early farming era. Due to the practice of clean cultivation on the moderate to steep slopes in the area, the loss of top soil through sheet erosion and gullying soon caused much land to be abandoned after one or two generations. The cotton acreage of a typical county (Tallapoosa), for instance, which was once 70,000 was down to 10,000 in 1945. (Most of this cotton acreage was in south Tallapoosa County on level river terrace land.)

Much of the abandoned land came back to stands of timber, principally pines, but much of it is still more or less unproductive agricultural income.

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\* Covers the period of Substation establishment in 1945 to Mr. Mayton's retirement on June 30, 1973.

## EARLY YEAR PROGRAM OF WORK

Early work at the Piedmont Substation chiefly concerned the development of the abandoned land through forage and feed programs so that it could be put into economical livestock production. Dairy, beef animals, and sheep seemed the logical choices since, as ruminants, they are principally forage consumers. (Objectives of this early work were reviewed and explained by Superintendent Mayton in the November 1949 issue of the Auburn Alumnews.)

Experiments and field utilization of such forages as alfalfa, lespedeza sericea, crimson clover, white clover, bur clover, kudzu, and various grasses were begun in the fall of 1945.

Studies on the production of crops and forages on Piedmont soils were carried one step nearer the farmer by setting up farm size units on the station. The operation of such units immediately identified problems confronting the farmer who changed his farm enterprises to include livestock, and indicated potential costs and income from such a change.

A unit combining the production of cotton and milk for manufacture was begun in 1949.

### 1945-46 Work

The first efforts after moving to Camp Hill were to become familiar with the area which comprised the substation and the development of a research and utilization program. Only one family still resided on the tracts to which the title was cleared, and they moved off within the first month. Of the total area, about 70 percent was in some type of forest. Timber had been cut from most of this forest area during 1940-45 when lumber prices were relatively high during World War II.

A survey of dwellings which might house laborers revealed that only one residence was suitable, with minor alterations. This was a house built under Farm Security Administration specifications of that period. Two other houses were deemed suitable with rather extensive repairs, which were made during 1945.

A carpenter from the Department of Buildings and Grounds at Auburn inspected the houses and advised on the needed repairs and made suggestions about the demolition of four other houses which were beyond repair. One of the houses was sold as it stood and some lumber from two others was used in building a barn on the area later designated as the Cotton-Dairy Unit. The fourth house, an unused shack, was torn down and burned. Two other former dwellings were left intact and used for a few years as storage buildings.

There was very little farm labor available in the Camp Hill area in 1945. Laborers were usually available only on a temporary basis. The first person hired left after 3 months and the labor available was primarily used to tear down old buildings. Carpenters and painters were hired to make necessary repairs of the designated residences.

A pair of mules, a Farmall M tractor, and a Farmall A tractor, with accompanying plows, harrows, and planting and cultivating equipment, were purchased for delivery in 1945. The only crops planted in the spring of 1945 were feed crops for the pair of mules. In the fall of 1945, several acres of forage crops, including alfalfa, crimson clover, white clover, oats, and the regular small

grain variety tests, were planted. These crops were seeded more or less on an experimental basis. The reseeding strains of crimson clover were overseeded on grass sods.

The first two permanent labor employees were hired in late 1945, Roy Patterson and Amos Inman, both from Randolph County. Ads for prospective employees were placed in several of the county papers. Amos Inman, who was with the station until September 1958, provided contacts through which nine other men from his home community were employed by the station over the next several years. Notable among them was Ernest Whitmore, who was our dairyman for 16 years.

During 1945, Aubrey Lloyd, the Soil Conservation Service technician in Houston County, was loaned to the station for one month to assist in the layout, building, and maintenance of terracing and drainage systems on the land.

#### 1946 Work

The main concern at the station in 1946 was the construction of four labor cottages, a machinery and storage shed, a feed and hay barn, and the establishment of a water supply system at substation headquarters. The Peerson Drilling Company of Birmingham was awarded a contract for a deep well and the installation of a deep well pump. Pat Landrum, the local plumber-electrician, installed all water and electrical systems in the various buildings through 1973.

J. W. McClendon came to the substation in early 1946 after completing his military service. McClendon and Superintendent Mayton had worked together on the pasture research project in the Department of Agronomy and Soils from 1938-41. For a short while before being called into the Army, McClendon was assistant superintendent at the Black Belt Substation. On termination of Army service, he transferred to the Piedmont Substation at the request of Director Funchess. He resigned in early 1947 to establish a tractor agency in LaFayette.

The labor cottages and the machinery shed built in 1946 were designed by Earl Lutz of the Buildings and Grounds Department. The design of these cottages was standard for the two substations established at that time. They were planned and designed under the supervision of Dr. E. V. Smith, who was appointed assistant dean of the School of Agriculture and assistant director of the Alabama Agricultural Experiment Station, July 1, 1944. One of these labor cottages was built on contract by a Dadeville carpenter and the other three and a barn were constructed by station personnel under the direction of W. C. Clanton, a local carpenter, with the masonry work done by the Fuller Brothers, brickmasons of LaFayette. The materials supply situation was still tight in 1946, but various supplies were purchased wherever they could be found. This construction occupied most of 1946, with very little farm operations or research attempted.

During this year, however, Mayton and McClendon planned for the start of a definite program of work for 1947. Conferences with department heads and staff members at the main station at Auburn were held. One trip was made to some of the other substations with established research programs to discuss detailed aspects of future operations based on their experience.

The operation of farm management units under the guidance of an appointed management units committee of the main station was a popular program of the Alabama Experiment Station at this time. This concept of farm research grew out of ideas and discussion between Director Funchess and R. C. Christopher, superintendent of the Sand Mountain Substation.

Basically, the concept was an attempt to put into operation the best practices on a whole family farm program. These units always combined two or more enterprises which produced products for sale. This would reduce the dependence on only one saleable product, namely cotton. Family size units with employment of the family labor and the use of land on as nearly a year-round basis as possible was the ideal. This year-round use of labor and land necessarily meant usually including some class of livestock on most of these units.

#### THE COTTON-DAIRY UNIT 1947-57

The Cotton-Dairy Unit was set in operation in March 1947, as the first major program of the Piedmont Substation. The buildings consisted of two labor cottages, a storage barn, and a milking and storage shed which was erected from what was formerly a war surplus tropical shell. Two families lived in the houses. Ten grade dairy cows were purchased locally or from Fred Callahan, a cattle dealer in LaFayette. It was planned that the unit would start with grade cows like those available to farmers of the area, and they would be graded up by selective breeding and selection based on production. The milk from each cow was weighed one day per week as a record of production.

In the early 1940's, the Carnation Company established a plant in Dadeville for processing manufactured grade milk. This provided an adequate market for this grade of milk in a 100-mile radius of Dadeville. There were producers from Lowndes County to Cleburne County and from Barbour County to Talladega County who at one time or another sold milk to this plant. A few producers from counties in West Georgia also sold to this plant. Promotion of this market was provided by Carnation field men and by county Extension Service staff in the area. The Farmers Home Administration and other service organizations were also active in this effort.

The choice of cotton as the other part of the unit was made because cotton had been the long-time cash crop in the area and all farm families were familiar with it. Cotton acreage in the Piedmont Area had been greatly reduced under the acreage control programs in effect since 1933. Also, there had been an increasing out migration of labor and farm families as other opportunities for employment occurred in the area or out of state. This was accelerated just prior to and during the war years, 1942-45.

The initial objective of this unit was that milk production should be through the use of forage, pasture, and hay with little or no grain or concentrate feeding. Such programs had been fairly successful on the Tennessee Valley Substation and on the Animal Husbandry farm at Auburn with production of 6,000 to 8,000 pounds of milk per cow annually.

Lespedeza sericea, a crop adapted to the thin soils of the Piedmont Area, was seeded on 16 acres of this land unit in 1946 to provide the principal summer pasture. An excellent stand was obtained and was first grazed during the summer of 1947. This crop was grazed usually at the rate of one cow per 1 to 1½ acres. Annually planted stands, on fallowed land, of crimson clover, ryegrass, and oats provided winter grazing. Bermudagrass permanent pastures were used for growing heifers and dry cows and occasionally for producing cows. A previously established acreage of kudzu was sometimes used for temporary grazing and for hay during the first 3 years of operation. The harvesting, storage, and feeding of kudzu hay was a difficult job and was discontinued after the first 3 years.

At the start of this unit, the cows were milked by hand but a one-unit DeLaval milker was installed the second year. The use of this equipment was helpful in the labor situation, even though some temperamental cows were still occasionally milked by hand.

Cotton acreage was under the acreage control program throughout the operational period of this unit. The average acreage for the first 3 years was 11.5 acres. In later years, it was reduced and finally reached 7 acres. In producing cotton, recommended practices as to variety, fertilization, and insect control were used. Cotton chopping, hoeing (when necessary), and picking were done by local hired female labor and these expenses were charged to the unit.

During the first 3 years, 1947-49, mules and mule equipment were used in the production of cotton and other jobs. During the period 1950-57, tractor and tractor equipment were used and charged to this unit.

Summaries indicate that the unit experienced a rather slow start. Income the first 3 years averaged \$3,975 per year. During the 6-year period, 1950-55, the income leveled off at an average of \$6,463 per year. The income for the last 2 years of this unit also was in line with this latter average.

One major problem encountered in the early years of the operation of this unit was the difficulty in getting cows to conceive when bred through the use of the Auburn artificial insemination unit. This problem was solved when a bull was purchased by the station.

In late 1952, C. J. "Buddy" Jacobs was hired as assistant superintendent. Jacobs was a well-trained, experienced Auburn graduate in dairying. He resigned after only 10 months to accept the position of Southeast field man for the National Guernsey Cattle Organization. Jacobs had previously been in the management of the Avondale Mills herd in Sylacauga.

At one time, approximately 1,500 farmers were selling milk to the Carnation Plant in Dadeville. This number gradually declined during the 1959-60 period so that it was not a profitable operation for the Carnation Company. They closed the plant in February 1961. When this plant closed, Wilson Porter, owner of the Dixie Cheese Company of Cedartown, Georgia, provided a market for manufactured grade milk produced by former Carnation patrons. The Piedmont Substation shipped to this company until April 1961 when they began to ship to Dairyland in Opelika.

In the late 1950's the management unit idea began to lose its value as a function of the Experiment Station system. Some staff members insisted that experimental comparisons using definite research techniques and procedures were the more valid responsibilities of the Experiment Station.

Following a suggestion from the experiment station director, main station and substation personnel began to work more closely together on specific dairy research. The Cotton-Dairy Unit was continued through the 1957 crop year and was closed March 1958, so that when funds became available new projects could be instigated. New projects were to deal with a specific problem which had statewide application.

#### DAIRY RESEARCH

During the period 1955-56 there were several discussions and memorandum exchanges among members of the Dairy Department, Extension dairy specialist, and the superintendents about the need for more specific dairy research.



Specific action toward new work was taken following the memorandum from Dr. Coyt Wilson dated October 18, 1957, which follows.

October 18, 1957

Memorandum to Messrs. E. L. Mayton, L. A. Smith, K. M. Autrey, J. H. Blackstone, and John R. Parrish:

I am anxious to complete the budgeting of the funds available for support of cooperative research at the outlying units. Research on dairy problems has a high priority, but we need to come to an agreement on a few points before we can develop specific plans. Therefore, I am asking you gentlemen to meet with me at 1:30 p.m., Monday, October 28, in the Conference Room of the Agricultural Engineering Building. Some of the questions that I hope we can settle at that time are:

1. What changes, if any, are to be made in the Management Unit on which milk for manufacturing purposes is produced? We will be particularly concerned with the Units at the Piedmont and Black Belt Substations.
2. Is there a need for a second Management Unit at the Piedmont Substation on which we would start with the best cows, feeding practices, labor saving practices, etc., that we could obtain?
3. Are there new experiments that should be started at the Piedmont and Black Belt Substations?
4. How pressing is the need for additional financial support for dairy research already in progress at the Piedmont and Black Belt Substations?
5. How can we use most efficiently the funds available to us?

You may think of other questions. If so, you will have an opportunity to bring them up for discussion.

Yours very truly,

/s/ Coyt Wilson

Coyt Wilson  
Assistant Dean and  
Associate Director

CW/pdh

cc: Dr. E. V. Smith  
Mr. J. L. Lawson

At this conference, which was attended by all those requested, there was frank and thorough discussion of the need for dairy research. The work of other units of the system other than Piedmont and Black Belt stations was also discussed.

Dr. Wilson advised that the problems should be defined and that each station should confine its efforts to one specific problem or project rather than try to scatter efforts over the whole field of dairy research. The problem selected should have statewide application rather than regional emphasis.

Following this meeting Dr. George Hawkins, of the Dairy Department, worked with us to develop a specific research project. The project title was: PRODUCTIVE PERFORMANCE OF DAIRY COWS ON CERTAIN FORAGES OF THE PIEDMONT. This was an overall title. Specifically, we compared the production and costs of producing milk on two forage systems; a short title used was: DRYLOT VS. GRAZING SYSTEMS. In the drylot system, alfalfa hay and corn silage were the forages used and the grazing system consisted primarily of annually planted crops of oats, ryegrass, and crimson clover for winter grazing and Starr millet for summer grazing. This comparison was made over a 5-year period, December 1958 to December 1963.

Joe "Sonny" Lott of Elmore County came with us as assistant superintendent in May 1958, just before facilities and equipment were constructed and installed for the dairy project to begin in December 1958. Joe had obtained both B.S. and M.S. degrees in the Dairy Department at Auburn and he came with us following military service. He was an experienced and well-trained person with the full confidence of Dr. K. M. Autrey, Dairy Department head, and Dr. Hawkins. He was a valuable asset to the station and was in complete day to day charge of the dairy enterprise. Joe was liked by the men and this was extremely important in the operation of the research program.

Joe Lott resigned in July 1960 to return to the family farm and John Sandy came with the station in November 1960. John also was an Auburn graduate in dairying. He was in day to day charge of the dairy project until it was completed in December 1963. He resigned in September 1964 to assume a dairy partnership operation in the Tennessee Valley Area.

A report on the work comparing dairy forages was published in the 1962 summer issue of Highlights of Agricultural Research. The report covers the first 3 of 5 years of the project, the period during which the grazing groups of cows were specifically on grazing for almost the total time.

The report described the feeding experiment, production and costs, and conclusions resulting from the experiment. It was revealed that there was very little difference in the production of milk or cost per 1006 pounds under two forage systems.

There were also indications that the pasture system when used in central Alabama would need some source of stored roughage for periods of grazing shortage which may occur at anytime during the year due to adverse weather conditions. Bulletin 363 reports the overall data of the experiment. Bulletin 368 summarizes the economic data.

The next dairy research concerned a choice of the necessary grain ration needed to supplement sorghum silage or Coastal bermuda hay when used as the principal forage. The forage system of corn silage and alfalfa was to be used as the yardstick for comparison. Coastal bermuda hay was the forage selected since it was the one most commonly used by dairy farmers.

The herd was carried along on forage and grazing as available from December 1963 until December 1964. The experimental periods in the 4 years of the project varied from 112 days to 120 days, during late fall and winter of each experimental year. The study was completed in March 1968.

The results obtained in this project were published in Bulletin 443, March 1973. In practical terms, the results clearly indicated that, to obtain acceptable production, the grain ration must furnish 75 percent of the TDN needed for high producing cows whose principal forage is Coastal bermuda.

This was the last definite experiment with the dairy herd on the Piedmont Substation. The herd and equipment were sold on the station at public auction in May 1969, ending 22 years of dairy effort on the Piedmont Substation.

#### BEEF CATTLE WORK

A brood cow and calf herd was started on the Piedmont Substation in 1949. Common grade cows were purchased from E. E. Blanton, of Opelika, and bred to a purebred Hereford bull also purchased from Mr. Blanton. The forage program for this herd consisted of approximately 1 acre of established lespedeza sericea for summer grazing and crimson clover-grass pasture when available in the cool season. The surplus growth of sericea was cut for hay, usually in June, and fed during the winter months.

K. G. Baker, superintendent of the Black Belt Substation, advised Piedmont Substation personnel about herd management and breeding. Most of the cows when purchased had been bred to calve in the spring; however, Baker suggested that fall calving was preferable due to the weight and price advantage. As quickly as possible, the herd was changed over to a predominately fall calving procedure.

The herd size was gradually reduced over the period 1954-55 so that work with sheep might be undertaken on the land used by beef cattle. This was a decision taken in cooperation with the Department of Animal Husbandry, the substation, and the director's office.

Plans for a forage field experiment were finalized in 1954 and a 21-acre area was selected, surveyed, and laid out for the different treatments. Planting of the forages was begun in the spring of 1955.

The forage species tested were lespedeza sericea; Coastal bermudagrass-crimson clover; dallisgrass-orchardgrass-white clover; and orchardgrass-alfalfa. Satisfactory stands of sericea, crimson clover, and Coastal bermudagrass were obtained. Stands on other treatments were not satisfactory. Each treatment was in triplicate on 1 3/4-acre plots fenced and grazed separately.

Grade steers were bought in the fall of 1955 and carried on a growth ration through the winter. Grazing was started in April 1956. Animals were weighed at 28-day intervals and stocking rates were adjusted according to the forage available. Clipping of the swards for measurement of forage available and consumed were made. Also fecal samples at stated intervals were obtained from the grazing steers for measuring digestibility of the swards. In both cases, these were obtained by main station personnel with the assistance of substation labor.

There were changes in this experiment in 1958-59. Bahiagrass was established and gave performance comparable to Coastal bermudagrass under moderate

nitrogen fertilization. After the first two seasons, wet brood cows nursing calves were used as the grazing measurement.

As one planted mixture or plant went out in this study, another possible forage or combination was planted. Over the years Pensacola bahia, Serala sericea overseeded with oats or rye, and Goar tall fescue were used. Surplus forage was harvested for hay.

The sericea used in the early years of this study was the common variety. This was a coarse, stemmy, tall growing variety rather low in palatability to cows. It would serve as a maintenance forage for animals but offered little as a growth or fattening ration as shown in the experiment.

The Serala variety was a finer stemmed, less coarse variety with improved palatability. This variety was released in 1962 and established as one treatment in this experiment on April 21, 1964.

The results of these mixtures and treatments were reported in Bulletin 338 published in March 1969.

A third sericea planting was made in this study. It was an experimental low tannin selection. It was planted in 1969 and pastured the following year. It was readily eaten by cows, but disease practically eliminated this planting the second year.

The final change in the experiment was made in 1968. In the last 3 years of this test, the forages were dallisgrass-Regal ladino clover, Coastal bermuda-Yuchi arrowleaf clover, and Serala sericea. The 3-year results, 1969-71, are reported in Circular 196 published March 1972.

#### Wintering Experiments With Beef Brood Cows

This comparative study of Coastal bermuda hay and sorghum silage as winter forage for cows nursing calves was conducted over several years. The use of protein supplements varied from year to year but supplied the same protein in any given year. The results showed sorghum silage plus protein supplement to be slightly more beneficial and more economical than Coastal bermuda hay plus protein supplement.

During 1 year of the wintering study a urea mixture was used as the protein source. Its use proved satisfactory when used with silage and sprinkled over the silage fed in a trough. When fed separately in a trough as with hay, it was not satisfactory. It was not palatable and if a cow ate too much there was a danger of death from poisoning.

#### Experiments on Finishing Yearling for Slaughter

This project was begun in 1967 as an exploratory study to compare drylot feeding and grazing systems for finishing cattle for slaughter. This was a follow-up of tests on some of the other substations where winter grazing looked promising. The first year results, 1967-68, on the Piedmont Substation were equally so.

The winter grazing mixture of rye, ryegrass, and Yuchi arrowleaf clover was seeded on summer fallowed land (June-September) fertilized according to soil tests. A phosphate-potash mixture was applied at planting in early September. Nitrogen was applied as a top dressing in October when a stand was

established. A second nitrogen topdressing was applied in late January or early February as weather permitted. Grazing was begun as forage growth permitted, at the rate of one steer per acre. This was usually by the second week of November, and continued until the first week of June or about 200 days.

In this mixture, rye furnished the earliest grazing, ryegrass came on during late winter, and ryegrass-Yuchi clover provided most forage during the spring period. During the 4-year period reported in Circular 196, no additional feed was supplied to the grazing-only group of steers.

The carcass grade on all animals was Good to Choice, with the exception of one animal in the corn silage group in 1970. There was a higher proportion of Choice carcasses in the corn fed groups. There was no objectionable pigmentation in the grazing only animals. These steers were sold to the Zeigler Packing Company of Selma and all carcasses were sold through their regular channels of trade.

This work was continued through 1971-72 and 1972-73 seasons with comparable results. The cost of all treatments and, therefore, cost per pound of gain increased due to inflation but the relative costs remain in favor of the grazing treatment. The grazing treatment looks even more attractive with inflation.

Ellis Burgess came with the Station in 1967 as Assistant Superintendent. He was in day to day charge of the beef cattle work during 1967-71.

#### ANIMAL DISEASE RESEARCH

The most comprehensive study with the Animal Disease Research Department at Auburn University was with Dr. George Kiesel over the 5-year period 1968-72. Principal objective of this work was to determine if vaccination and/or pre-condition feeding of weaned calves would help in the control of the shipping fever complex. Calves from the Piedmont Substation herd were weaned as per the procedure outlined at 6 to 8 months of age in July and August and used in this work. In 1968 the calves were trucked to Capital Stockyards in Montgomery for exposure. Half of those were vaccinated and half were not. No symptoms of shipping fever occurred in either group.

In other years, challenge animals were purchased at the stockyards as the source of infection and penned with the station's weaned calves. Again, half of the calves were vaccinated with a single or mixture of preventative serums.

Daily observations were made of all calves. In no year did the vaccination procedure control shipping fever. Essentially, all calves exhibited shipping fever symptoms. In some instances a few of the calves required treatment, and there was one death.

#### RESEARCH WITH SHEEP

In the early 1950's there developed considerable interest in sheep as a farm enterprise. In 1953-54, in cooperation with Dr. C. M. Martin of the Animal Husbandry Department and four other substations, a sheep research program was started.

In May 1954, a flock of 60 Western ewes (30 Rambouillet and 30 Suffolk X Rambouillet crosses) was purchased. The ewes were divided into three equal groups and exposed to rams of the Dorset, Montedale, and Suffolk breeds. The objective of this was (1) to compare the two groups of ewes of different breed composition for spring lamb production, and (2) to compare three different mutton type rams for siring spring lambs of desirable weight and finish.

Spring market was considered to be the best market opportunity for the lambs. This meant that the ewes were bred out of their normal breeding season to drop lambs in the fall. The fine wool breed Rambouillet ewes proved much superior to the Suffolk X Rambouillet crosses for breeding out of season, May to August, to drop fall and early winter lambs.

In October 1957, 125 Targhee ewes were purchased in Montana and brought to the Piedmont Substation. Four purebred Targhee rams from the USDA Sheep Research Station in Idaho were with these ewes. At the same time, 125 Rambouillet ewes from Texas were brought to the station.

Each breed of ewes was divided into three groups and exposed to rams of the same breed during the next 3 years. The exposure season was from about May 15 to September 1.

After these three breeding seasons, the ewes were rigorously culled and those which had lambed irregularly or late were removed. In the remaining 2 years, the ewes were exposed from May 15 to July 1.

In work with sheep, good management practices were used on advice of the project coordinator. Phenothiazine - salt mixture was kept before sheep at all times for internal parasite control. Also, they were periodically given liquid drench. Feet were trimmed and foot baths were used for control of foot rot, which probably helped but was far from adequate for control.

A second group of Rambouillet ewes was brought from Texas for further studies on the Piedmont, Lower Coastal Plain, and Black Belt substations. Early lambing when bred to mutton type rams was the major objective with this group as well.

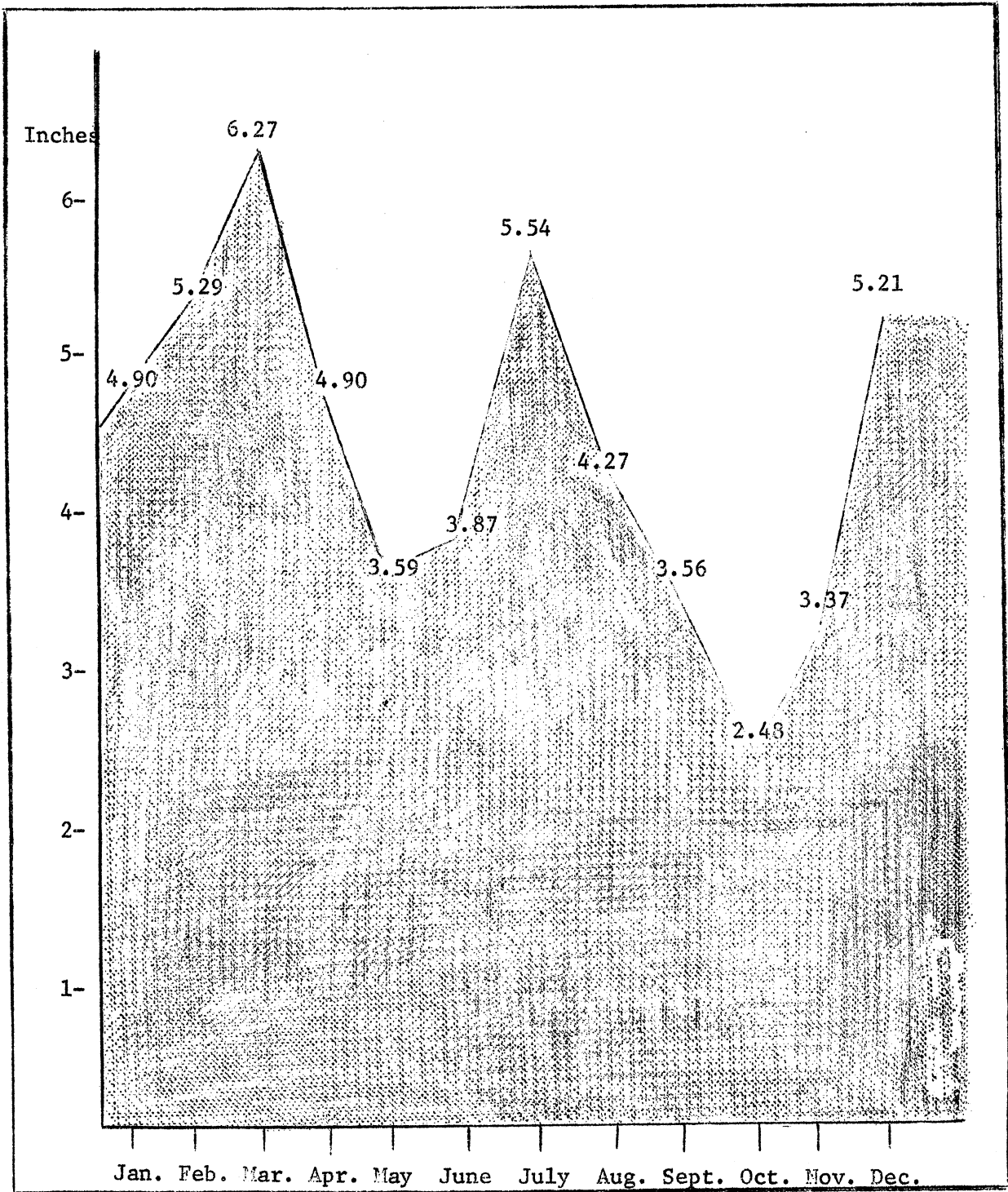
The work with sheep ended with the sale of the remaining ewes to the Animal Disease Research Department, April 27, 1966.

Bulletin 394, published October 1969, reports the overall research with sheep over the 1954-1969 period.

#### WEATHER DATA

A complete monthly rainfall record at Camp Hill since January 1901 has been maintained in the files of the Piedmont Substation. The only exception to this monthly record is for the years 1943-44-45, when the monthly totals at Dadeville were used.

The Camp Hill records were begun by Dr. Lyman Ward, a Universalist minister from New England, who had come South in 1899 to establish a self-help school for boys. He started keeping rainfall records as a local observer on January 1, 1901, and continued through 1942. The substation records were begun in 1946. Average monthly rainfall during the 73 years is plotted on the graph.



73-year average monthly rainfall at Camp Hill, Alabama  
yearly total average for 73 years---53.20 inches

### Weather Extremes

The year 1954 was the driest year on record, with only 30.38 inches recorded. This was 21.08 inches below the 54-year average of 51.46 inches. Every month of 1954 was below the normal average for that month.

The wettest years over this period were 1964, when 76.91 inches were recorded, and 1961, with 75.02. The month of February 1961 was the wettest month when 20.00 inches were recorded. This amount was exceeded by only one other reporting Alabama station, Greenville, with 20.25. This month largely accounts for the excessive total of 1961.<sup>1/</sup>

A daily temperature record (minimum-maximum) has been kept by the station since 1946. Weather records have been sent monthly to the designated Weather Bureau Processing Center since 1950.

The minimum temperature recorded at Camp Hill since 1946 was 0 degrees, January 30, 1966. The winter of 1950-51 was the most severe on record. A low temperature of 6 degrees was recorded November 25, followed by six nights of below freezing temperatures. On February 2, 1951, a minimum of 8 degrees was recorded. The low temperatures of this winter changed plans concerning a year-round grazing program and emphasized the need for a reserve of stored feed.

The best crop year recorded on the Piedmont Substation was 1955. This was a welcome contrast to the extremely dry year of 1954. The recorded rainfall for 1955 was 52.94 inches and the distribution was ideal.

### APPLE RESEARCH

In the late 1950's and early 1960's there developed an interest in apple production in some Piedmont counties, primarily Coosa and Tallapoosa. Hoyt Webb, county agent first in Coosa and later in Tallapoosa County, was a leader in encouraging this interest. Interest among the substation personnel was stimulated by the performance of several seedling apple trees on the station and by the quality of one seedling tree which was planted in 1948 and came into fruit in 1957-58.

The need for work with apples was emphasized by the following memorandum by Dr. Wilson to Professor Ware, dated July 24, 1963.

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<sup>1/</sup> The 1975 records show 91.03 inches of rain fall were recorded. This was 37.32 inches above the 75-year average of 53.71 inches, three times the lowest rainfall in 1954, and 14.12 inches above the 1964 high.



July 24, 1963

Memorandum to: Professor L. M. Ware

From: Coyt Wilson

I am attaching a copy of a memorandum from Mr. J. C. Nullington to Dr. Ben Hagler and a copy of a memorandum from Dr. Hagler to me concerning the interest of some people in apples in Tallapoosa and Coosa counties.

When I visited Mr. Mayton on June 28, he told me that he is interested in establishing an apple orchard on the Piedmont Substation and using the orchard in a cooperative research program with specialists from the Main Station.

I think it would be appropriate for you or Dr. Amling to schedule a meeting to discuss this further and to develop plans if the discussion indicates the need for the work.

I believe that in addition to representatives from the Department of Horticulture and Mr. Mayton, we should have someone from Botany and Plant Pathology, the Department of Zoology-Entomology, and the Division of Plant Science in the Extension Service.

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Attachments 2

Dr. Coyt Wilson scheduled a meeting of the interested personnel from the Horticulture, Botany, and Entomology departments and the Substation in March 1964.

Following this meeting and discussion a definite project outline was developed by Dr. Harry Amling of the Horticulture Department and a sum for the purchase of planting stock was allotted to the Substation.

Orders were placed for planting stock to be available for the 1964-65 dormant season. A suitable orchard site was selected in cooperation with Dr. Amling.

The site was laid out, staked, and prepared for digging holes during November and December 1964. Jack Turner, of the Horticulture Department, supervised the operation. Holes approximately 24 inches in diameter and 20 inches deep were dug in late December so the site was ready for setting on the arrival of trees.

The first trees were set January 1965, and other trees received later were set in early March.

The four major objectives in this work as stated in the project outline were as follows:

- (1) To evaluate Spur Red Delicious and Spur Golden Delicious on various Malling Merton rootstocks and seedling rootstocks in a close spacing planting.
- (2) To evaluate early coloring red sports of non-spur type Red Delicious on Malling Merton 106 rootstocks.
- (3) To evaluate spur strains of Red Delicious and Golden Delicious in conjunction with insect and disease research programs of Zoology-Entomology and Botany-Plant Pathology departments.
- (4) To evaluate routine orchard management practices under Alabama Piedmont area conditions.

A total of four separate blocks of trees comprising approximately 5 acres was set in 1964-65 and completed in 1965-66. Two of these blocks were designated as horticulture blocks, one as the entomology block, and the fourth as the pathology block. As the research progressed trees in each of these blocks were used for other treatments so long as they did not interfere with the original purpose. In all years since 1970, each tree has been used in at least two research procedures.

The most unexpected problem first appeared in 1967 when it was observed that the Golden Delicious entries, which were to serve as pollinators, did not bloom at the same time as the Red Delicious. They were 1 to 2 weeks later in blooming.

In 1968, Mollies Delicious scions were grafted onto one-fourth of the Golden Delicious trees. It had been observed that this variety did bloom along with the Red Delicious. This grafting on to all Golden rootstocks was completed in 1970. In 1968 and thereafter, pollen was purchased and supplied by use of inserts into the bee hives or by spraying or both. This procedure was to ensure pollination until the Mollie Delicious grafts were large enough to supply sufficient pollen.

The fact that Goldens did not bloom with the Reds emphasized that a grower should not depend solely on one variety for pollination. In later plantings, other varieties were used to determine the most dependable ones for this purpose.

Since 1971, a small trellis planting has been established. A variety orchard has been planted including some of the newer varieties of Reds and Goldens. The 5-acre orchard was considered too small to investigate all the problems encountered so other plantings have been made.

#### LATER CONSTRUCTION OF FACILITIES

In 1948, the superintendent's residence was built at the station headquarters. A second and more thorough renovation of an established residence for the assistant superintendent was made in 1952 when "Buddy" Jacobs was hired. The residence was used by successive assistant superintendents.

In 1958, a milking parlor with equipment meeting Grade A specifications was built. Also five silos to serve this project were built in 1958-59.

Also in 1958, the office-auditorium was built. This building provided three office spaces, a kitchen, and an auditorium which seats comfortably 150 people. The building is equipped with a complete heating and cooling system.

#### OTHER COOPERATIVE PROJECTS

The Piedmont Substation has had cooperative work with every department of the Main Station except Poultry and Fisheries. Major projects with Animal Husbandry, Dairy, Agronomy, Horticulture, Agricultural Economics, Botany, Zoology-Entomology, Animal Disease, and Forestry have been discussed. In most of these projects two or more departments were cooperators. Other projects with the various departments are listed as follows:

##### Agronomy and Soils

1. Corn variety test each year since 1945
2. Small grains variety test each year since 1945
3. TVA sericea fertilizer test
4. Rates of minerals to corn
5. Cotton sinkers test
6. Grain sorghum variety test
7. Depth of placement and rates of lime for alfalfa
8. Alfalfa variety test
9. Fertilizer rates for alfalfa
10. The control of alder by chemicals
11. Rates and dates of application of nitrogen to oats
12. Cotton variety test - special wilt test (1953-54)
13. Sericea - grass mixtures test
14. Winter grazing crops test
15. Sorgho variety test (Coop USDA)
16. Silage variety test

##### Agricultural Engineering

1. Construction of whole field water handling system
2. Harvest and storage of grass type silage

##### Horticulture

1. Plum variety test
2. Fertilizer test with cucumbers
3. Fertilizer and spacing test with pimento peppers

##### Zoology-Entomology

1. Control of weevils in stored grain
2. Materials and rates of application for alfalfa weevil control
3. Bionics and control of biting flies on farm animals

In the alfalfa weevil control test in cooperation with Dr. Max Bass, several insecticides were tested at varying rates of application over a 3-year period.

These tests were on general crop alfalfa applied usually in early spring before the first cutting for hay. This was the period of the most severe damage by this insect. Heptaclor as a fall application gave almost complete control of this pest but its use was prohibited because of possible contamination of milk and meat products. A second material which at the time was designated by experimental number of the Niagara Chemical Company gave good control. This material was later released for use under the name Furadan.

The attack of this weevil was the third strike on alfalfa in the Piedmont Area. Some had been grown by dairymen in the 1940's and 1950's, but after the weevil infestations it seemed a lost crop.

#### WILDLIFE

The first project involving the Piedmont Substation and the Cooperative Wildlife Research Unit consisted of the planting of quail food patches on scattered areas of the station to determine if such food patches might increase quail numbers. An area of the station that did not contain such plantings was a check area. The whole area of the station was surveyed to determine the number of coveys. Surveys of the areas were made in following years to determine the results. The essential conclusion was that the planted feed patches did not seem to cause an increase in quail numbers. It was plainly evident that quail did feed at these plantings and that hunters could more easily find coveys in the vicinity of those feed patches.

Another project investigated the control of nuisance beavers. These pests, according to oldtime residents of the community, had infested the principal creek through the station during the past 75 years. During some periods the infestation was worse than at others. The beavers were a particular problem on this stream after it had been cleared in 1967. The dams built by the beavers would cause flooding and poor drainage along the stream course.

Killing the beavers throughout the whole watershed course of the creek seemed the most effective control measure. Approximately 25 beavers were killed, half of them by a night policeman on the Camp Hill force, which brought them under control on the 3/4-mile length of this creek on substation property. Dams were dynamited or destroyed with a backhoe.

#### FORESTRY

Of the 1,409 acres of the Piedmont Substation, an estimated 800 acres are in some kind of forest stand. On the uplands and areas once in cultivation, the stand is predominately pine. Stream bottom stands are predominately low value hardwoods. The rougher, steeper areas, which have never been cleared, have stands of oak and hickory hardwoods interspersed with pines or vice-versa. Aerial photographs of the Piedmont counties indicate that more than 80 percent of the area is in forest stands. Logging and pulpwood harvests are carried on almost continuously throughout the area. As has been indicated previously there had been a timber harvest over most of the land of the station just prior to purchase. A program for the use of these 800 acres was of concern to the superintendent.

In 1951, William R. Sizemore, of the Sizemore Company of Tallassee, recommended that an overall timber harvest would be beneficial. His company was authorized in August of that year to cruise and mark saw timber and pulpwood which should be harvested. Byron Welch, of East Alabama Company of LaFayette, was high bidder for the cutting which was performed in 1952.

Other cuttings were made over the timber in 1960 and 1966. Two or three other salvage cuttings of pulpwood were made to open small tracts of land and to remove trees from around the orchard planting which were competing with the newly planted trees. Total sales over the 21-year period timber sales have amounted to \$43,300 from the 800 acres with a coming growth of timber left on all harvested acres.

In 1969, Professor W. B. DeVall, head of the Forestry Department, recommended that a forest management plan for the acreage be drawn up by a professional land management company. The plan was to include a management program for the 10-year period from September 1969 to September 1979. Timber harvests in 1974 and 1979 were suggested, with a projected income of \$63,254.50 at September 1969 prices.

The first research plantings were made in July 1968. These station plantings were vegetative material from selected pine stock. It was designated as a clone bank for preservation of superior germ plasm. Subsequent plantings total approximately 10 acres of pines and some 3 acres of Arizona cypress for improved Christmas trees. These plantings were to serve as seed trees in the future.

#### YUCHI ARROWLEAF CLOVER

Special mention should be made of this Alabama named variety of arrowleaf clover. This clover came as a USDA plant introduction which Dr. Carl Hoveland began experimenting with in the early 1960's. He established the first work with it on the Piedmont Substation in 1966 and a larger test in 1969. It seemed especially adapted on Piedmont soils for fall seeding on closely grazed grass pasture to give late winter, spring, and early summer grazing. It appears some slower in growth under such conditions than crimson clover but lasts several weeks longer than crimson. It is palatable even in the bloom stage, also. During adequate rainfall conditions in June and July it has furnished valuable high quality pasturage well into July.

It is strictly an annual plant, but one that produces abundant seed with the potential of volunteer reseeding. To check this potential it was seeded on fertilized grass sod which was closely grazed in October 1969. This sod was open to cows on winter feeding experiment until late April. They were removed and immediately a full and vigorous stand of Yuchi was evident. A seed crop was produced and this area was in full volunteer stand in each of the next 3 years.

Dr. Hoveland summarized his work with this clover at several locations in Alabama in Bulletin 396 entitled Yuchi Arrowleaf Clover.

MEETINGS

The Piedmont Substation was being established during the period when a number of vocational classes were being held for returning World War II veterans. Many of these groups from the Piedmont counties met one or more times on the substation.

During the late 1940's and early 1950's one or more meetings for Negro farmers were held annually in cooperation with Dr. Hill of Tuskegee Institute.

Prior to the construction of the office-auditorium building in 1958, meetings were held in the machinery shed. Field trips over the station to view work in progress were emphasized. After 1958 meetings were held in more comfort and usually were on a specific enterprise such as dairy, beef cattle, sheep, or apples.

IN APPRECIATION

I would like to express my personal appreciation to many who have been helpful not only while serving as superintendent of the Piedmont Substation, but my first 15 years as a member of the Agronomy and Soils Department.

First to R. Y. (Dick) Bailey, who gave the first opportunity on graduation in 1929. Then to Dr. J. W. Tidmore and Dr. Norman Volk, heads of this department.

Certainly to Dean Funchess who gave me the opportunity at the Piedmont Substation. His direction, confidence, and inspiration were of untold value, as they were to many other staff members.

To Dr. E. V. Smith, who succeeded Dean Funchess as dean and director, as a personal friend and outstanding director. Dr. Smith presided over an expanding staff which greatly broadened and intensified the scope of agricultural research as the state's agriculture moved from a one-crop status to a multi-enterprise agricultural economy. Such an expansion of research was timely and the opportunity challenging and inspiring.

To Dr. Coyt Wilson, associate director from 1951 to 1965, whose leadership was most helpful in the planning, financing, and directing of this expanded program of research. His efforts in starting new dairy research on several of the substations in 1958 gave us the first opportunity to conduct a rewarding research program in this field. His interest in apple research in the Piedmont area gave us this research opportunity. He was always receptive to any discussion of a particular problem and was helpful in finding a solution.

To W. H. Weidenbach, of the director's office, who kept the paper work moving and was most helpful in the overall routine of implementing the policies of the director's office. For this long-time personal family friendship, too, we are most grateful.

To Miss Frances Tippins, who succeeded Mr. Weidenbach and who continued the efficient operation of that office.

To the Business Office personnel also, under the direction of W. T. Ingram, for their help and understanding when we might have sometimes slightly violated the routine procedure. To Frank Powell and Mrs. Ruth Waldrop of this office for efficient handling of routine purchases and for those times when purchases had to be placed by the "walk through" procedure.

To Miss Eleanor Horne, long-time secretary in the Agronomy Department, who insisted on the proper preparation of purchase order requests and the prompt approval for payment of vouchers.

To Dr. R. D. Rouse, for the organization and operation of the Soil Testing Laboratory which provided a new service for Alabama farmers.

As associate director and as dean and director since 1972, for his leadership at the State and National levels. This effort which led to the acquiring of additional land and facilities, the E. V. Smith Research Center promises much in the future for an expanded research program for Alabama Agriculture.

To Tom Corley who came to the director's office in 1966 as assistant director for outlying units. From this date to my retirement in 1973, there was close contact with the director's office through him on all matters of policy, financing, and routine procedures. Mr. Corley instituted one policy which was most helpful: no new work of a substation could be started until there was an approved project outline which spelled out objectives, estimated costs, procedures, and responsibilities of the project leaders. Such a policy avoided any misunderstandings among the personnel involved.

To the several assistant superintendents who have been named in this writing: J. W. McClendon, C. J. "Buddy" Jacobs, J. J. "Sonny" Lott, John Sandy, Ellis Burgess, and finally to Wallace Griffey who came to the substation July 1, 1972, and is now superintendent.

We were especially pleased that Wallace and Freda Griffey came to us in 1972. Wallace has B.S. and M.S. degrees in animal husbandry from the University of Tennessee. He has had experience as manager of two purebred Angus herds, one in Florida and one in Georgia. He was animal husbandman for 7 years at the Central Georgia Experiment Station, Eatonton, Georgia, before coming to us.

It would be amiss too, not to mention several employees of the substation for their loyalty, competence, and attitude toward the work to be done.

Amos Inman, a competent worker as well as a valuable contact with other men who came with us.

Ernest Whitmore, "Whit" as we knew him, who was the dairyman for 16 of the 22 years we operated a dairy program. All of us - Jacobs, Lott, Sandy, and the superintendent - will always be grateful to him for his loyalty and competence of his work.

Other employees include Ralph Randolph and Rob Spence, who each were with the station 10 years. Johnnie Doss and Wince Woody were faithful employees either as full time workers or as extra hands as needed.

Finally, my appreciation to my wife, Lois, who has shared the troublesome as well as the good times as a substation wife. She has supervised and helped with serving of meals and snacks at meetings, run errands, answered the extension telephone, delivered messages, and entertained visitors. She has graciously shared these experiences through nearly 30 years.

Also to our two daughters, who grew up as small town or farm girls and who thankfully seemed to bring all the school and church parties home with them to share goodies prepared by their mother.





