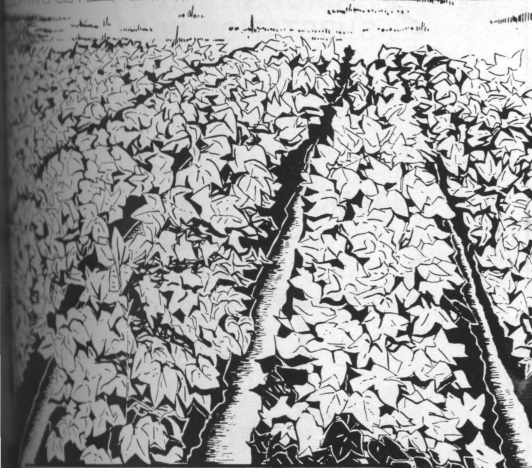
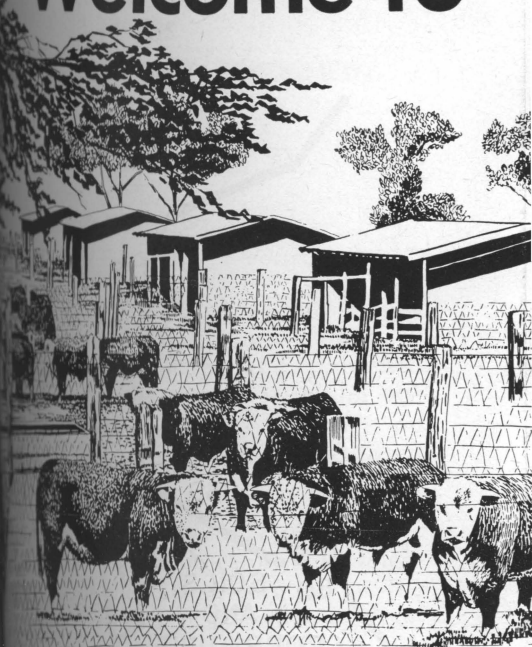


MARCH 1961

Welcome to



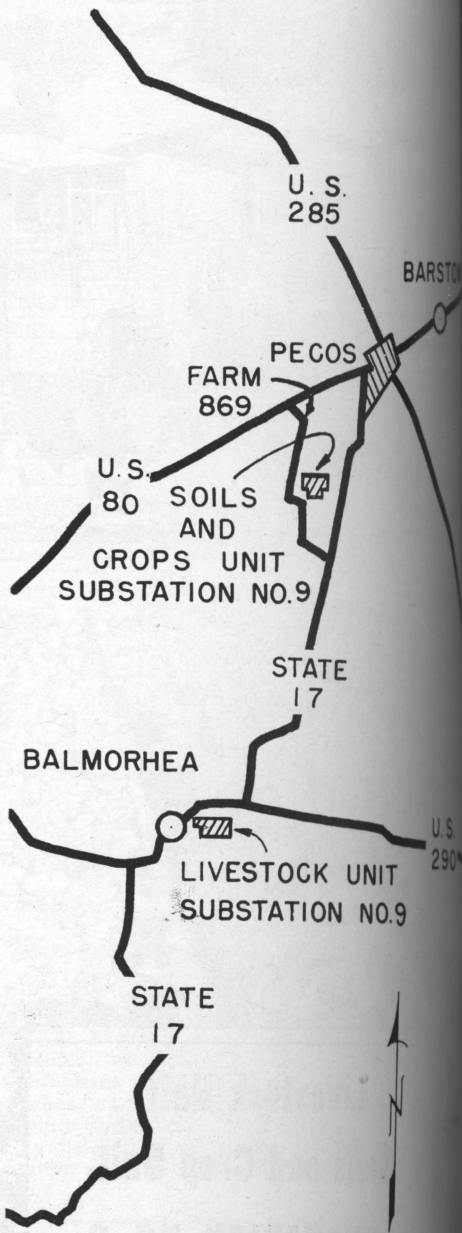
Livestock Unit
Soils and Crop Unit
SUBSTATION NO. 9



AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

TEXAS AGRICULTURAL EXPERIMENT STATION

L. D. LEWIS, DIRECTOR COLLEGE STATION, TEXAS



Highways to the Soils and Crops Unit and the Livestock Unit of Substation No. 9.

Welcome

to the

TEXAS AGRICULTURAL EXPERIMENT
STATION

Substation No. 9

Livestock Unit — Balmorhea
Soils and Crops Unit — Pecos

Substation No. 9, generally known as the Trans-Pecos Experiment Station, was authorized in 1909 by the Texas Legislature and established three and one-half miles west of Pecos for the primary purpose of conducting research on forage crops, cotton, fruits and horticultural crops.

The station was moved in 1922, to a 200 acre site four miles east of Balmorhea on U. S. Highway 290, which is the present location of the Livestock Unit. Situated at the northern foothills of the Davis Mountains, the elevation is 3,200 feet above sea level. Summer nights are usually cool, although day temperatures of over 100 degrees are frequent. Temperature extremes of -9 degrees and 112 degrees have been recorded. The average rainfall for a 36-year period was 12.9 inches, with a high of 28.1 inches in 1932 and a low of 2.8 inches in 1956. The last killing frost in the spring occurs about March 27, and the first killing frost in the fall occurs about November 13, giving a growing season of approximately 231 days.



Annual fields days are well attended by both men and women.

Research at the Livestock Unit is directed toward the improvement of beef cattle and other phases of beef production. In past years, many studies were conducted to determine how to utilize home grown feeds most profitably. It was shown that, when using high roughage rations of alfalfa and hegari bundles for steers in feedlot, better gains are made if hegari bundles replace all but 3 to 4 pounds of alfalfa in each animal's daily ration. Tests also showed that cottonseed could replace a portion of the protein and grain used in fattening cattle. This was an important factor when the new cottonseed oil mill was some 200 miles distant and the cost relationship favored the direct buying of cottonseed.

The Soils and Crops Unit of Substation No. 9 was established in 1958. It is located 10 miles south and 2½ miles west of Pecos on Farm Road 869. The land and some of the equipment for the new unit were donated by local businessmen and farmers who contributed money from their 1957 cotton crop.

The Pecos Valley and Trans-Pecos area is well known for high cotton production and good quality lint. Considerable expansion of irrigated acreage has occurred in the area since 1957. Principal research activities involve problems related to water quality and utilization, soil structure, weed control, insect control, cotton breeding and factors effecting cotton quality. Research is also conducted with grain sorghum, small grains and crop rotations in an effort to provide a balanced agriculture and insure continued economic stability in the area.

Research activities are coordinated between the Livestock Unit, the Soils and Crops Unit and other Experiment Stations in the Trans-Pecos area.

Although special field days are held for the public each year, visitors are welcome at all times.

Personnel of Substation No. 9

LIVESTOCK UNIT	SOILS AND CROPS UNIT
Balmorhea, Texas	Box 1549
Phone 2675	Pecos, Texas
A. A. Melton,	Phone HI 5-8435
<i>Superintendent</i>	Earnest L. Thaxton, Jr.,
Floyd Jenkins,	<i>Superintendent</i>
<i>Farm Foreman</i>	Amos A. Wilson,
	<i>Farm Foreman</i>

Agricultural Research Projects *at the* *Livestock Unit*

BEEF CATTLE

Performance and Progeny Testing

Pioneer work in performance and progeny testing of beef cattle was started at this station in 1941. To date, more than 2,000 young breeding animals have been fed and tested under uniform conditions for gaining ability. These animals were young bulls for the most part and were in sire groups of three or more. The data show that gaining ability is quite variable among sire groups and individuals. Each year, a difference of approximately 1.5 pounds in rate of daily gain has been recorded between the high and low gaining individual animals, and about .6 pound per day difference in gain between the high and low gaining sire groups. Weight, to a large extent, determines the total number of dollars the producer receives for an animal. Since gaining ability is highly heritable, these test results are a valuable aid in selecting replacement breeding stock.

Offspring from proven high-gaining sires consistently have outgained offspring from lower-gaining sires. For example, the high-gaining individual of the 1950-51 test sired the high-gaining sire group each of the three years



Pens of young bulls used in performance and progeny tests.

progeny have been on test. In five years of testing with different bulls of the high, medium and low-gaining categories, results indicate that for each half-pound difference in gain of the bulls on test, there will be a difference of about 100 pounds in weaning weight of their calves, and about 30 pounds difference after finishing the feedlot.

Carcass Evaluation

The final result of beef cattle production is when the meat is on the dining table. Some half brothers to bulls on gain test, are being slaughtered for carcass evaluation. The steers are slaughtered at the Texas A&M College Meats Laboratory where the carcass is evaluated for dressing percent, tenderness, chilled carcass weight per day of age, ribeye area, fat covering over the eye, ribeye area per hundredweight of chilled carcass and percent of high priced cuts (loin, rib and round).

Management and Feeding

In an effort to offset increasing costs of production and scarcity of labor, cattlemen in the area employ a wide range of supplemental feeding practices. Some feed cottonseed cake daily or every other day, others feed meal and salt mixtures or protein-mineral blocks, while a few are using liquid feeds. Tests are under way at the Livestock Unit to determine the effect of frequency of feeding protein supplement upon growth, reproductive performance and weaning weight of calves.



Carcass evaluation studies aid in the development of superior beef cattle.



Detailed records are kept to determine the effect of frequency of feeding protein supplement to beef cattle.

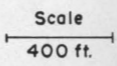
Three groups of 50 weaned Hereford heifers are used in the test. Each group is fed 14 pounds of cottonseed cake per animal each week during the winter feeding period. Group 1 is fed daily, Group 2 is fed twice weekly and Group 3 is fed three times a week. The test will be repeated with the same groups of cattle for 4 or 5 years. Results will be compiled and a most comparison of the different feeding frequencies will be made.

The use of hormones which stimulate growth has been widely accepted in the cattle fattening industry. It is estimated that about 75 percent of cattle in feedlots receive hormones either in feed or as implants. Research has shown that feeding 10 milligrams of stilbestrol daily, or implanting 36 milligrams in the ear of yearling cattle at the beginning of the feeding period, will increase daily gains approximately 15 percent while increasing feed efficiency 12 percent.

Tests now are underway to determine the performance of cattle implanted with stilbestrol during suckling, grazing and fattening periods. Eighty animals are involved in this test. One group of 10 will be implanted in all three periods. Three groups of 10 each will be implanted twice, using difference combinations of these periods. Three groups of 10 each will be implanted only once, representing each of the three periods, while one control group of 10 animals will receive no implants.

Objectives of this test are to determine the effect on weaning weights when suckling steer

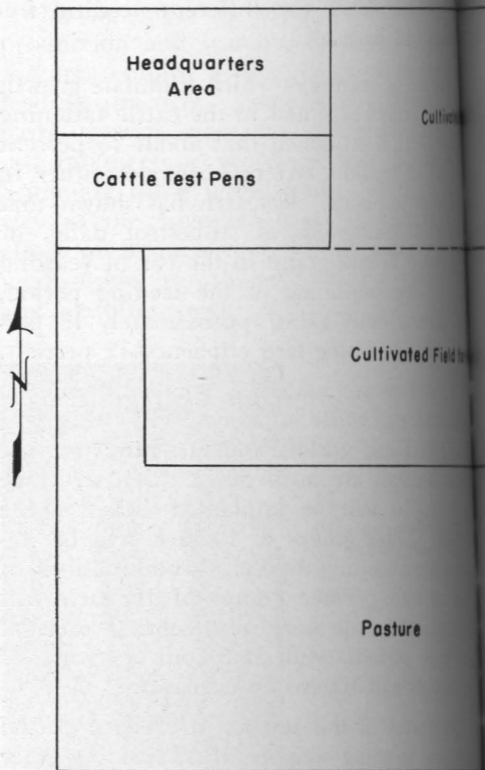
System
basic
studies

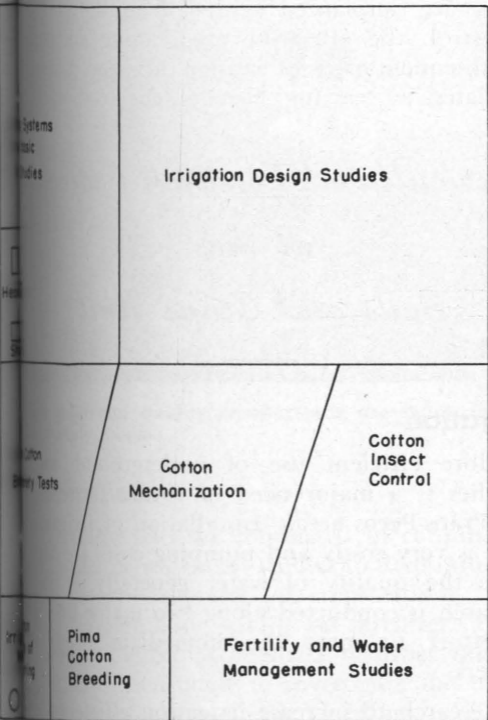


Soils and Crops Unit, Substation No. 9
Pecos, Texas

Cotton
variety

Station
No. of
planting





Scale
660 ft.

Livestock Unit, Substation No. 9
Balmorhea, Texas

calves are implanted with 12 milligrams stilbestrol, the effect of pre-weaning implants on subsequent gains of weaned calves on pasture and later, as yearling steers in the feedlot.

Agricultural Research Project

at the

Soils and Crops Unit

COTTON

Irrigation

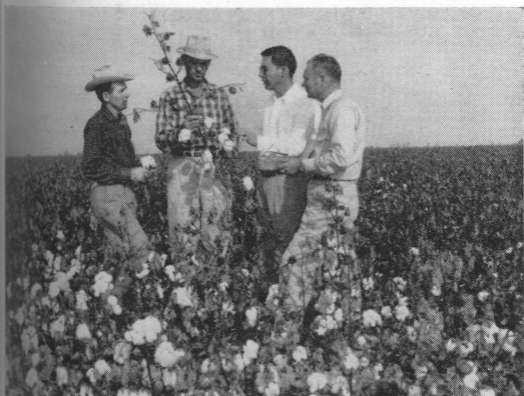
More efficient use of underground water supplies is a major need of cotton farmers in the Trans-Pecos area. Installation of irrigation wells is very costly and pumping costs are high while the quality of water generally is poor. Research is conducted along two major lines in an effort to meet the immediate needs of farmers.

Research to increase irrigation efficiency involves intensive studies on infiltration rates, length of run, influence of slope and leaching problems.

Water management and its effect on plant growth is the second phase of irrigation research. Investigations primarily deal with irrigation intervals, amount of water applied per irrigation and date of last irrigation. Studies are also made of bed contouring and seedbed preparation.



Plastic lining reduces loss of water in irrigation ditches.



Both yield and quality comparisons are made in cotton variety studies.

Fertilization

Fertilizer tests are conducted in conjunction with water management studies to determine the most economical rates of application. Also under way are basic studies on fertilizer uptake and on the effect of fertilizer on fiber quality. Plans have been made to investigate the use of liquid phosphates and foliar feeding.

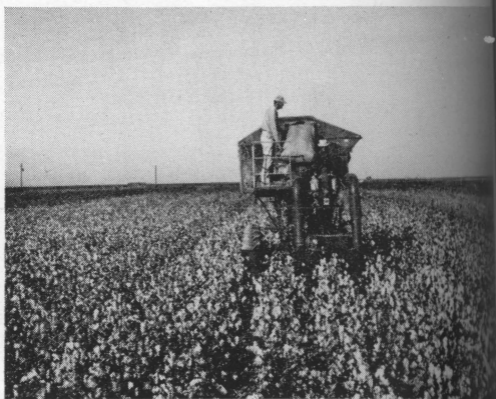
Research on cotton fertilization is coordinated throughout the Trans-Pecos area. Many tests are conducted on off-station fields from Pecos and vicinity to Ysleta.

Breeding

Research on cotton breeding is conducted on both short staple and extra long staple varieties. The breeding program is designed to study and test new varieties or promising new strains which show disease resistance, produce larger yields or better fiber quality. Many off-station tests are conducted in the area to provide information on varieties for the various irrigated valleys comprising the Trans-Pecos area.

Mechanical Harvesting

The Trans-Pecos area is highly dependent on transient labor for the cotton harvest. Most harvest labor is supplied by Mexico through labor agreements. Although this source of labor has been satisfactory in past years, it appears unwise to be totally dependent on Braceros for the cotton harvest. Since no adequate source of local harvest labor is available in the sparsely



Mechanical harvesting of cotton reduces dependence on migratory labor.

populated area, mechanical harvesting will likely play an important role in the future. For this reason, much research is being done with mechanical pickers on both short staple and extra long staple cotton.

Grain Sorghum

Little grain sorghum has been produced by area farmers because of the saline soils and high summer temperatures. Too, present varieties are not well adapted. Tests have shown that cotton following grain sorghum is easier to produce and often yields more per acre, thus indicating that grain sorghum might be used profitably in a crop rotation system. Research is under way to determine the best varieties for the area and to determine an effective fertilizer program and irrigation schedule.



Many forage and grain sorghum varieties are evaluated at the Soils and Crops Unit.

CROP ROTATIONS

As in most new agricultural areas, initial crop production is very high in the Trans-Pecos area, but difficult to maintain over a long period of time. Rotation systems generally used in other areas have not proved effective here because of differences in climatic conditions and soil characteristics. Sound rotations will be needed, however, to maintain the present high level of production. Of the crops tested, oats and barley have shown the most promise for inclusion in rotations since both have produced excellent yields under irrigation. Good yields from crops grown in rotation with cotton are necessary because of the high cost of irrigation water.

Basic studies on the effect of cropping systems on soil tilth and structure will provide answers to many problems as area soils are depleted. The effect of rotation systems on disease control is also being studied in order to provide a sound soil sanitation program.

PRODUCTION COSTS

Crop production costs in the Trans-Pecos area have been higher than in other parts of the Southwest because of soil types, insect problems and the high cost of water. While research in irrigation, insect control, cotton breeding and crop rotations is aimed at producing higher yields or better quality, the primary goal is to reduce production costs, thus allowing the farmer a greater net return per acre. Research in crop production practices is designed to develop a system of cotton farming which will combine research findings from the basic tests into an economical program. This program will not necessarily produce the highest yield, but is designed to produce the largest return of money per dollar invested. Many factors such as water table and soil depletion must be considered in determining the best overall production system for the area.

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STATE-WIDE RESEARCH

The Texas Agricultural Experiment Station is the public agricultural research agency of the State of Texas, and is one of the parts of the Agricultural and Mechanical College of Texas.

The Main Station and headquarters are located at College Station, with 20 substations and field laboratories located throughout major agricultural areas of Texas. In addition, 15 cooperating stations are owned by other agencies, including the Texas Forest Service, the Game and Fish Commission of Texas, U. S. Department of Agriculture, University of Texas, Texas Technological College, Texas College of Arts and Industries and the King Ranch. Some experiments are conducted on farms and ranches and in rural homes.

The Texas Agricultural Experiment Station is conducting about 430 active research projects, grouped in 25 programs which include all phases of agriculture in Texas.

Research results are carried to Texas farm and ranch owners and homemakers by specialists and county agents of the Texas Agricultural Extension Service.

ADMINISTRATION

R. E. PATTERSON, *Dean of Agriculture*

R. D. LEWIS, *Director*

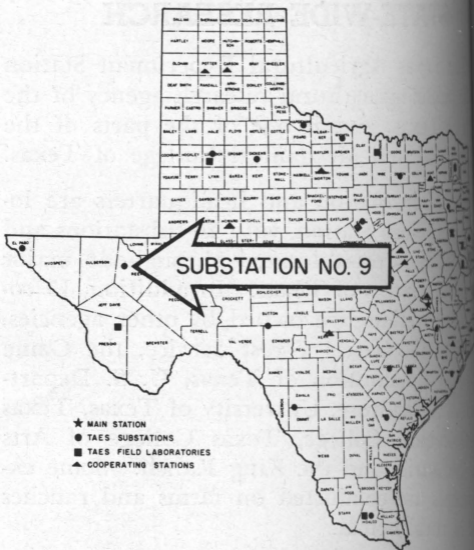
ROLAND J. HILDRETH, *Assistant Director*

VICTOR E. SCHEMBER, *Assistant Director*

ALVIN A. PRICE, *Assistant Director*

College Station, Texas

AGRICULTURAL RESEARCH seeks the WHATS, the WHYS, the WHENS, the WHEREs and the HOWS of hundreds of problems which confront operators of farms and ranches, and the many industries depending on or serving agriculture. The workers of this substation, along with those of the Main Station and other field units of the Texas Agricultural Experiment Station, diligently seek to find solutions to these problems.



FOR BETTER LIVING

Today all people have a stake in agricultural research. The quality and quantity of food, feed and fiber available for their welfare are dependent on the information developed through organized research.

The Texas Agricultural Experiment Station concerns itself with problems confronting, and likely to confront, farmers and ranchmen, rural homemakers, farm groups and representatives of other organizations depending on or serving agriculture.

Continued agricultural research is necessary to point the way toward maintaining and improving our productive resources; lowering cost of production; improving quality; expanding markets; devising new and better methods for growing, processing, distributing and utilizing farm and ranch products and toward better city and country living.

Researchers of the Texas Agricultural Experiment Station are dedicated to that aim. *Today's Research is Tomorrow's Progress.*