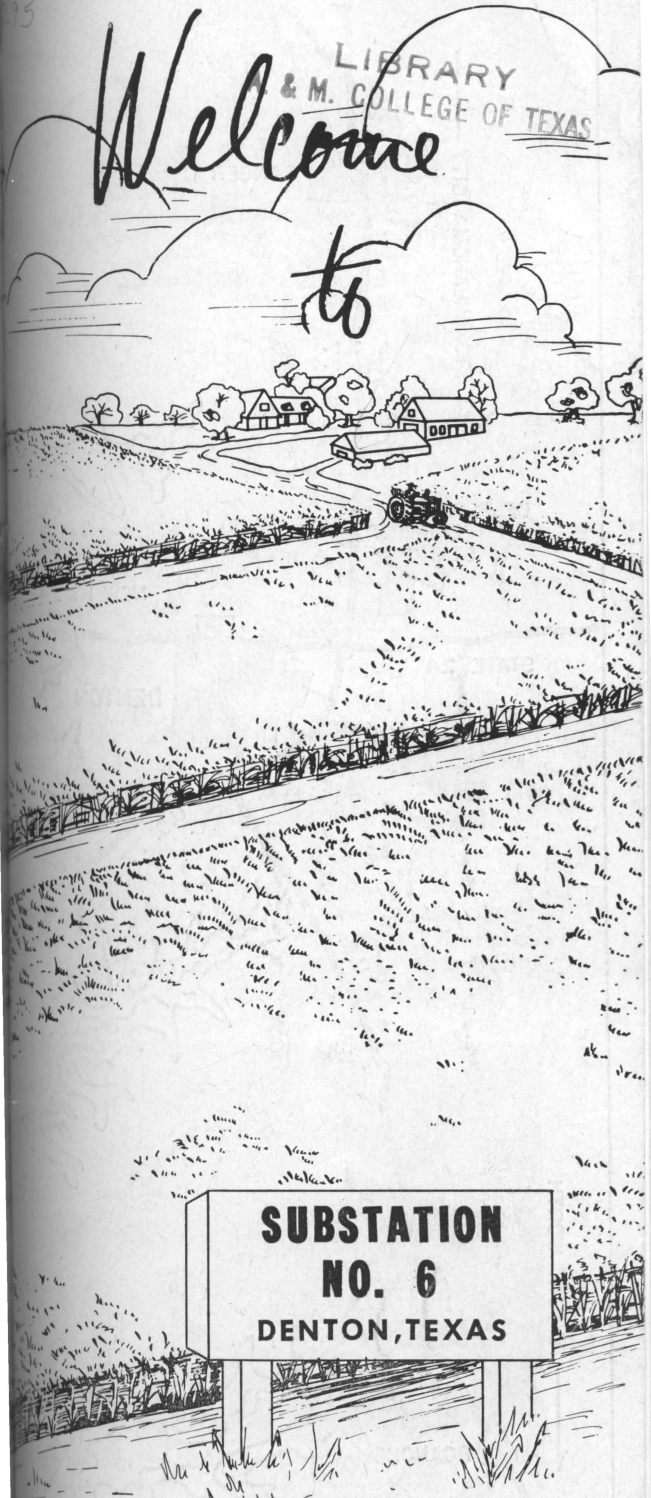
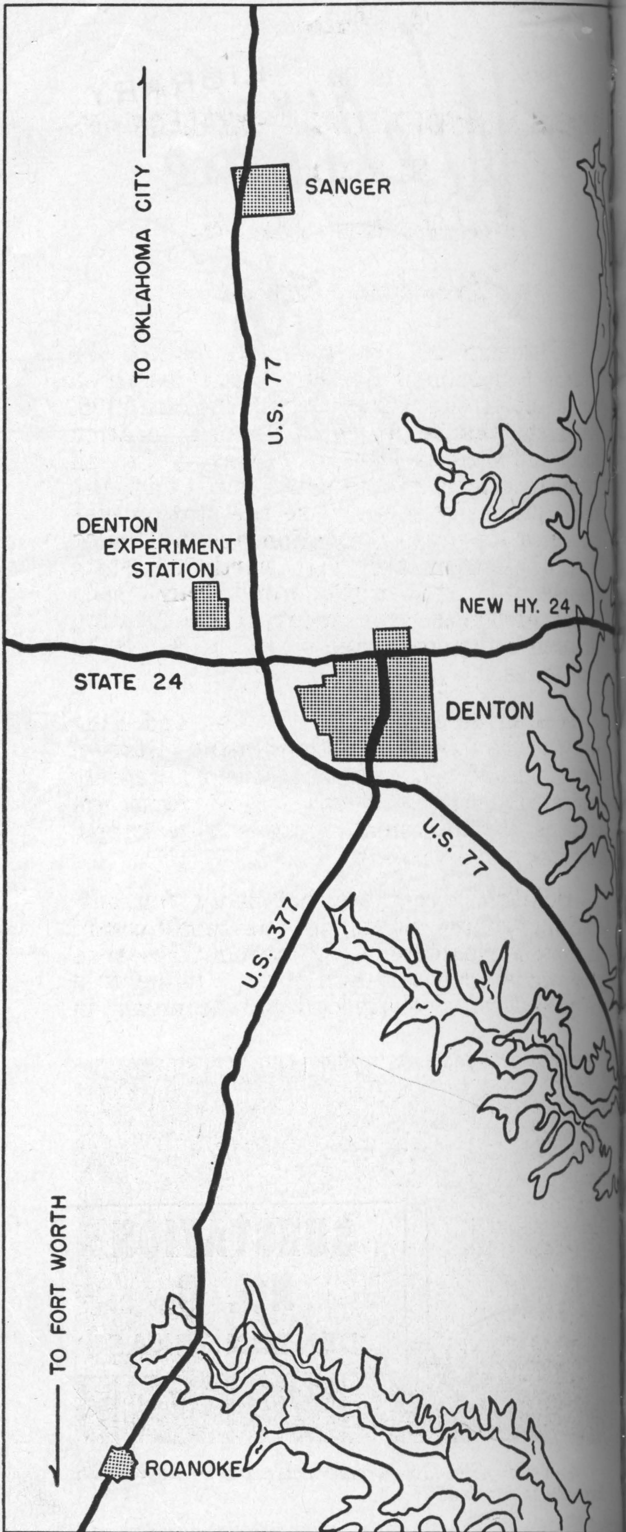
MP-171 JUNE 1956

Welcome to



TEXAS AGRICULTURAL EXPERIMENT STATION



TO OKLAHOMA CITY
SANGER
U.S. 77
DENTON
EXPERIMENT
STATION
NEW HY. 24
STATE 24
DENTON
U.S. 77
U.S. 377
TO FORT WORTH
ROANOKE

Welcome

to the

TEXAS AGRICULTURAL EXPERIMENT STATION

Substation No. 6, Denton, Texas

Substation No. 6, generally called the Denton Experiment Station, was established by an act of the Texas Legislature in 1909. Research was begun in 1910 at a location south and west of Denton; however, the soil "was not typical of the small grain belt, the region primarily served," so the station was moved to its present location about 5 miles west of Denton and just north of State Highway 24. It is in the Grand Prairie soils region of Texas with most of the station research being conducted on soil of San Saba clay series.

Located 40 miles from Dallas and Fort Worth, the Denton Experiment Station serves one of the richest and most densely populated areas of Texas. Most farm operations include small grains, row crops, pastures and livestock.

Although recognized primarily for outstanding contributions to the small grain phase of agriculture, a well-rounded research program is underway at Denton. It includes all phases of the agricultural economy in

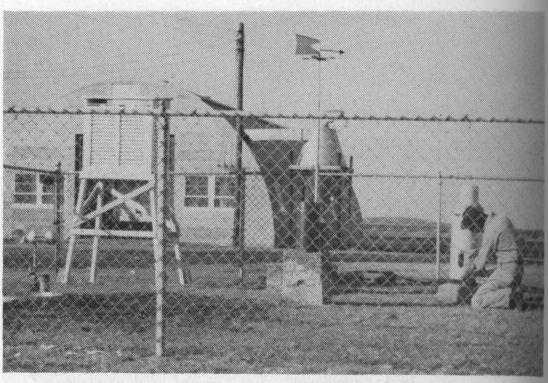
An aerial view shows research plots at the Denton Experiment Station.

the area. Principal research includes small grains (wheat, oats and barley), legumes, warm and cool-season grasses, fertilization, cropping systems, mechanical harvesting of cotton, winter cover crops, insect and disease control and variety testing. Research with small grains is conducted in cooperation with the U. S. Department of Agriculture. To more adequately serve the various soil types, the Texas Agricultural Extension Service cooperates with the Denton station in a pilot plot demonstration program which enables field testing of new developments in research on farms having various soil types in five nearby counties.

Early settlers brought with them the Red Rustproof oats, which proved to be well adapted to North-Central Texas conditions. Many fine selections were made from these "native" oats but none was highly winter-hardy. In North Texas, ability to withstand sudden cold often means the difference between a crop and failure of winter grains. Winterhardiness in the Mustang variety of oats is one of the major contributions of the Denton station to the agricultural economy of Texas.

Development and release by the Denton station of such outstanding oat varieties as Nortex, New Nortex, Mustang and Alamo; of wheat varieties including Quanah and Frisco; and barleys such as Wintex, Texan and Cordova, has meant millions of extra dollars to the livestock and small grain industry.

Elevation of Substation No. 6 is about 600 feet above sea level and the 42-year



Meteorological data are important in agricultural research. The Denton station has kept accurate records for almost half a century.

average annual rainfall is approximately 33 inches. The average first killing frost in the fall is November 11, and the last killing frost in the spring is March 22, making the annual growing season 233 days. The average annual minimum temperature is 54 degrees F., the average maximum temperature is 77 degrees F., and the average mean temperature is 65 degrees F.

A field day is held in May of each year. Visitors are welcome at all times. The mailing address is Route 1, Box 547, Denton, Texas, and the telephone number is C-6508.

Personnel of the Texas Agricultural Experiment Station

D. I. DUDLEY, *Superintendent* (*Forages*)

A. A. BALTENSPERGER, *Agronomist* (*Field Crops*)

J. H. GARDENHIRE, *Agronomist* (*Small Grains*)

P. A. RICH, *Agronomist* (*Soils*)

C. O. SPENCE, *Associate County Extension Agent-Agronomist* (*Pilot Plot Demonstrations*)

Personnel of the Agricultural Research Service, USDA

H. L. CHADA, *Entomologist* (*Small Grain Insects*)

D. E. WEIBEL, *Agronomist* (*Small Grain Breeder*)

People want to know what's new in agricultural research.

Agricultural Research Projects at Substation No. 6

SMALL GRAIN BREEDING

Oats

Four outstanding varieties have been developed and released by the Denton station in the cooperative oats improvement program. A continuous search is made for lines that have improved disease and insect resistance and more winterhardiness.

Varieties which have been released include Nortex, New Nortex, Mustang and Alamo. Nortex, a selection from the original Red Rustproof oats, was grown for several years. However, the variety appeared to be variable for height and maturity and a superior line was selected from it. It is New Nortex, which is one of the outstanding oats for the South. Seed of New Nortex are large and are highly desired by mills. During the past 8 years, New Nortex has yielded an average of 61.0 bushels per acre, which is 15 to 20 percent above the older varieties.

Mustang, a gray oat released in 1951 for its winterhardiness, leaf rust resistance and stiffer straw, has an average annual yield

Individual heads of disease-free oat selections are threshed for further testing and improvement.

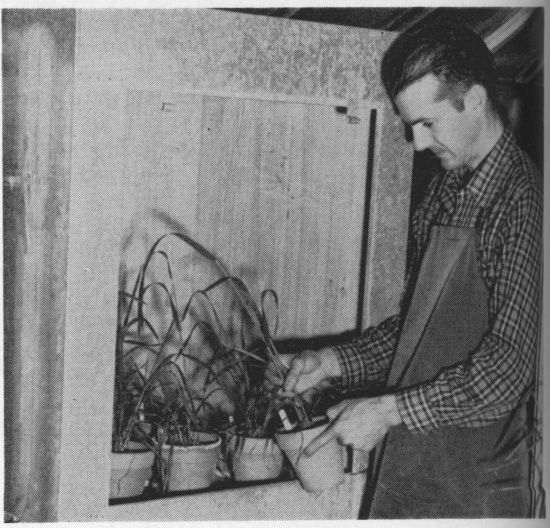
of 60 bushels per acre, and is resistant to many races of crown rust but is susceptible to stem rust. Since Mustang is 5 to 7 days earlier in maturity than New Nortex, it escapes serious damage from rust in some years. The grain of Mustang is somewhat smaller than New Nortex but is slightly higher in feeding value.

Alamo is a new oat developed for spring seeding in this area. It is resistant to both crown and stem rust, but is susceptible to Helminthosporium blight. Therefore, Alamo always should be planted on rotated land. During the past 8 years, Alamo has yielded 59.9 bushels per acre from spring seeding, compared with 50.1 bushels for New Nortex.

Wheat

Three leading varieties of wheat have been developed and released by the Denton station and several others have been tested here and are recommended for commercial production. Varieties developed at the Denton station are Westar, Quanah and Frisco. Westar is a high-yielding, good-quality wheat which is best adapted to the High Plains area. Quanah is a high-yielding, excellent wheat for milling and baking. It is best adapted to Central Texas where its resistance to leaf and stem rust is especially valuable. Frisco is a rust-resistant, high-yielding, beardless, soft wheat, adapted to North-Central Texas. It has produced higher yields than its parent variety, Red May. Comanche, Triumph, Wichita and Concho, hard winter wheat varieties, and Knox, a soft wheat variety, also have been found by tests at Denton to be superior for North-Central Texas production. Seed of Crockett, a new

Quanah, an excellent and widely planted variety of wheat, was developed and released at the Denton station.



Wheat selections are inoculated and tested in development of new rust-resistant varieties.

variety developed at the Denton station and now approved for release, is being increased for commercial planting in 1958. This variety has produced outstanding yields of grain in North-Central Texas and has excellent milling and baking characteristics.

In cooperation with plant pathologists of the USDA, studies are underway to determine the northernmost limit where stem rust can live through the winter. More information is sought on the climatological and vegetative conditions necessary for natural infections of stem rust to occur, and once established, how the disease spreads in early spring. The inheritance of resistance to stem rust in certain wheat crosses is being studied to serve as a guide for future wheat breeding and the development of rust-resistant varieties.

Effort is being directed toward the development of varieties with extremely short straw for use under high fertilization. The breeding of greenbug-resistant wheats also has been initiated.

Barley

Varieties of barley developed and released here make up much of the approximate 160,000 acres of barley planted annually in Texas, and an average of 5,000 selections are tested annually in breeding

Barley strains, right, lacking winterhardiness are eliminated from the breeding program.

plots for higher yields and disease and insect resistance. Cordova, a smooth-awned and mildew-resistant variety released in 1952, produced an average of 43.8 bushels per acre, compared with 29.9 bushels per acre produced by Wintex. Cordova also has outyielded Texan, a similar variety developed and released here, by 1.7 bushels per acre.

Several commercial barley varieties and experimental strains crossed with greenbug-resistant lines show promise of possessing resistance and are being increased for further testing.

PASTURES

Establishing Pastures

Tests are underway at the Denton station to establish perennial pastures with wheat and oats as a companion crop, and to determine how date and method of seeding affect the establishment of pasture grasses. Grasses used include sideoats grama, buffalo, Caucasian bluestem, Rhodes, blue panic and Dallis.

During the past 2 years, wheat and oats as companion crops were detrimental to the establishment of these grasses. Of the three dates of seeding used — fall, early spring (March 1) and late spring — early spring resulted in the establishment of more plants per acre. Seed quality as related to rate of seeding is being checked in the test.

Pasture Legumes

Realizing that no pasture in this section is complete without a legume, tests are underway to determine the yield and compatability of both summer and winter legumes with various pasture grasses. Alfalfa is the best pasture legume when used on cropland, while California and button bur clovers have proved the most consistent in reseeding and maintaining themselves under adverse pasture conditions. Vetch produces well in combination with small grain on cropland and with Coastal Bermudagrass in permanent pastures.

Grass Adaptation Tests

A large nursery, which includes about 75 varieties and selections of grasses, is maintained to determine the adaptation, performance and palatability of various pasture grasses under North Texas conditions. Due to location of the Denton station, grasses are considered for their possibility for either the drier sections to the west or more moist areas to the east.

Buffalo, Caucasian bluestem and Coastal Bermuda have proved the most desirable grasses in tests. Johnsongrass selections are being tested to determine their full possibilities as a forage. Tests show Johnsongrass selections yield up to 6,000 pounds an acre, or three to four times as much forage as some short grasses.

Sudangrass has proved an outstanding summer annual grass. A new strain of perennial Sudangrass developed at the Lubbock

New varieties, strains and selections of grasses are tested at the Denton station for adaptation.

Experiment Station looks promising in local tests. It has survived four winters at Denton and still is producing satisfactorily.

Cool-season Grasses

Cool-season grasses, such as bromes, fescues, orchard and Harding, have been tested alone and in combination with legumes for several years. None has proved satisfactory, primarily because of inability to withstand the hot, dry summers under grazing conditions. On cropland, ryegrass, wheat, oats and barley will produce about twice as much grazing as cool-season grasses.

Texas wintergrass and Western wheatgrass survive summer conditions of the Denton area, but do not afford as much grazing as small grains and ryegrass. Rescuegrass, a native annual which normally reseeds itself, is one of the first plants to provide grazing in the fall.

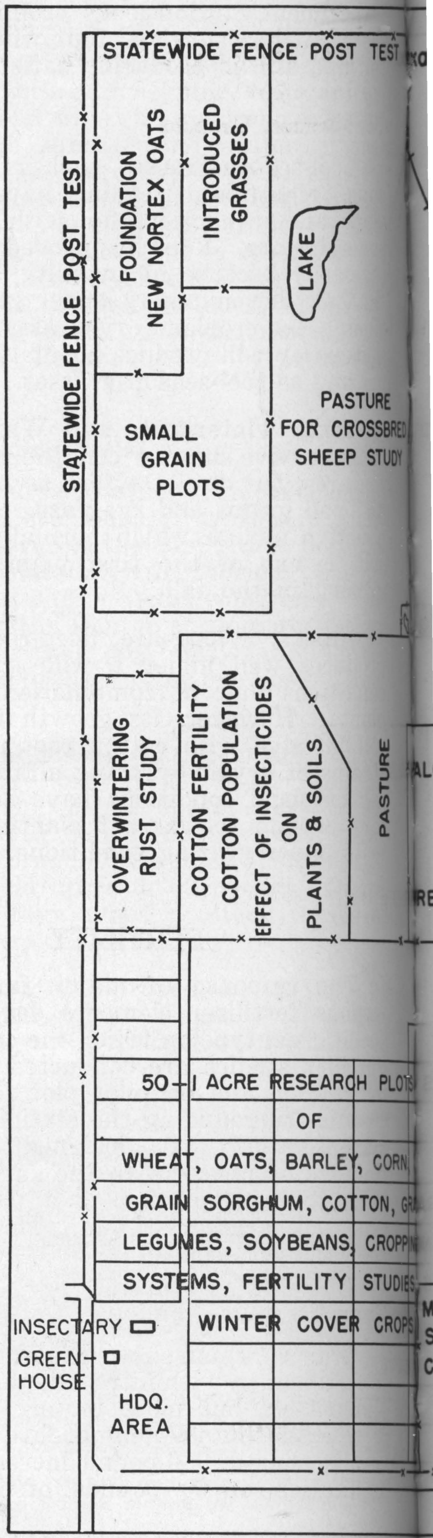
Alfalfa, a long-life, deep-rooted legume, produces well under a wide range of soil conditions and in combination with other plants. However, its growth is limited in soil infested with cotton root rot. Twenty strains of dryland-grazing alfalfa tested under cropland conditions have been satisfactory enough to warrant planting additional tests under grazing conditions.

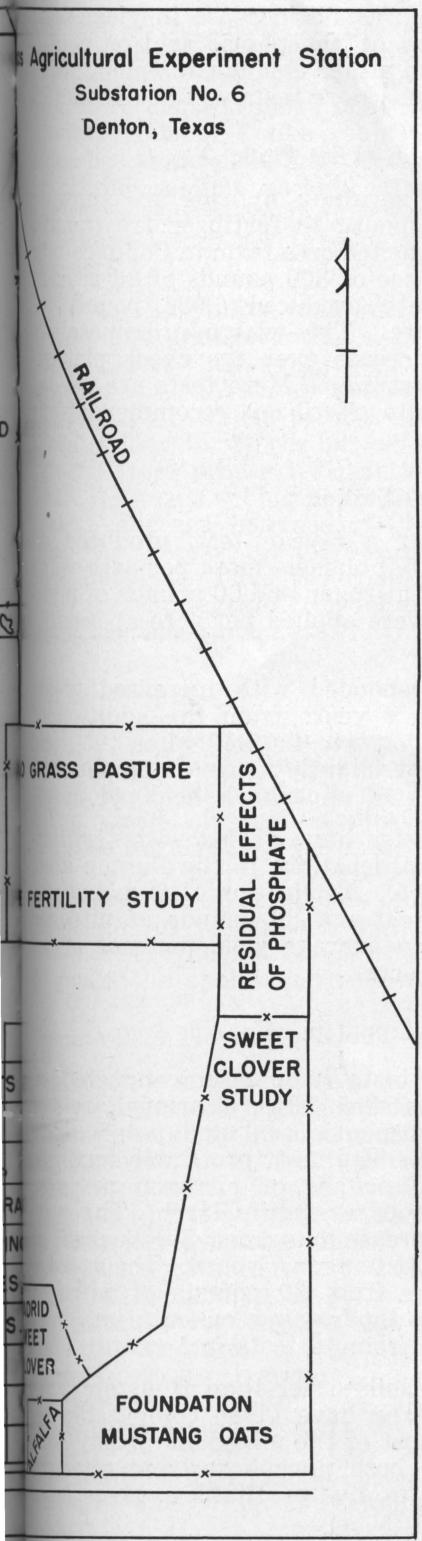
FERTILITY

The response of major farm crops to various fertilizer elements depends on the specific soil type on which the crop is grown. Fertility studies are conducted on the Denton station and on pilot plot farms in five counties surrounding the station. Pilot plot demonstrations are designed to take the findings of research to the farms to determine their adaptation to a particular soil type and farming system. The results will be discussed separately.

Grain Sorghum—Station

Grain sorghum showed favorable response to fertilization with nitrogen, phosphoric acid and potash, but more testing is necessary to give a definite recommendation. One-year results show a 980-pound increase from the application of 60 pounds of nitrogen per


STATEWIDE FENCE POST TEST
STATEWIDE FENCE POST TEST
FOUNDATION NEW NORTEX OATS
INTRODUCED GRASSES
LAKE
PASTURE FOR CROSSBRED SHEEP STUDY
SMALL GRAIN PLOTS
OVERWINTERING RUST STUDY
COTTON FERTILITY
COTTON POPULATION
EFFECT OF INSECTICIDES ON PLANTS & SOILS
PASTURE
50-1 ACRE RESEARCH PLOTS
OF
WHEAT, OATS, BARLEY, CORN,
GRAIN SORGHUM, COTTON,
LEGUMES, SOYBEANS,
SYSTEMS, FERTILITY STUDIES
WINTER COVER CROPS
INSECTARY
GREEN-HOUSE
HDQ. AREA


Agricultural Experiment Station
Substation No. 6
Denton, Texas
RAILROAD
GRASS PASTURE
FERTILITY STUDY
RESIDUAL EFFECTS OF PHOSPHATE
SWEET CLOVER STUDY
FOUNDATION MUSTANG OATS

acre. There was no increase in yield from an application of phosphoric acid or potash alone or from either element in combination with nitrogen. More tests will be conducted.

Grain Sorghum—Pilot Plots

The new sorghum hybrids are showing favorable response to fertilizer treatments. In a test conducted on a farm in Collin county in 1955, the use of 300 pounds of 20 percent superphosphate produced 6,036 pounds of grain per acre. This was approximately a 900-pound increase over the check plot receiving no fertilizer. More tests are needed before definite fertilizer recommendations can be made.

Small Grains—Station

Oats, over a 6-year test, produced an average of 15.2 bushels more per acre when 30 pounds of nitrogen and 60 pounds of phosphoric acid were applied per acre at seeding in the fall.

Barley responded with increased yields only once in 7 years from the addition of fertilizer. That was in 1952 when the yield was increased slightly from an application of 60 pounds of phosphoric acid per acre.

Wheat yields have varied with fertilization at several locations in the Denton area, except in 1955. Application of 60 pounds of phosphoric acid and 30 pounds of nitrogen resulted in an average yield increase of 7.6 bushels per acre.

Small Grains—Pilot Plots

Fertility tests have been conducted on Houston soils since 1949. Various levels of nitrogen, phosphoric acid and potash have been studied. The most profitable fertilizer has been 30 pounds of nitrogen per acre applied as a topdressing in March. The average acre increase has been 8.8 bushels of wheat from 31 tests in 7 years. The average acre increase from 30 pounds of nitrogen applied as a topdressing on oats has been 22.8 bushels from 16 tests in 5 years.

Tests on soils other than Houston types in North Texas have given comparable results. On most of the mixed and sandy soils of the area, both phosphorus and nitrogen are required to give profitable returns from

the use of fertilizer. Tests since 1952 in Cooke, Grayson and Fannin counties indicate that 30-60-0 fertilizer per acre gives the largest returns on most soils. On the more drouthy soils of Cooke county, phosphorus alone has given yield increases. In the higher rainfall section, an application of 30-60-0 has increased the yield of wheat an average of 9 bushels per acre and oats 21.3 bushels per acre.

In the 16-county area surrounding Fort Worth and Dallas, farmers plant annually about 218,167 acres of wheat and 221,158 acres of oats. With an average increase of 8 bushels of wheat to the acre and with wheat selling for $2 per bushel, the increased returns from proper fertilization is $3,490,672. With oats selling at 70 cents per bushel and an average increase of 22 bushels per acre, the increase in the returns from oats is $3,405,833. Thus the combined increase from the small grain crop for the area could be $6,896,505 annually.

Cotton—Station

Fertility tests are underway to determine the proper rates and ratios of nitrogen, phosphoric acid and potash to apply to increase cotton yields. Enough results have not been obtained for a specific recommendation. However, a slight increase in yield resulted from an application of 60 pounds of nitrogen and 60 pounds of phosphoric acid per acre, but the increase did not offset the cost enough to make the application economical.

Cotton—Pilot Plots

Cotton is a difficult crop to fertilize profitably. However, on the low-lime, low-phosphorus soils of the area, a profitable increase has been obtained from an application of phosphoric acid. The date of maturity is hastened and the yield increased. Tests for 4 years indicate that an increase of about 200 pounds of seed cotton can be expected from an application of 30 pounds of phosphoric acid per acre. On high-lime Houston soils, the increase has been about 60 pounds of seed cotton per acre.

Pastures—Station

Pastures have shown good response to nitrogen and phosphorus applications. Le-

gumes responded favorably to phosphorus and grasses to nitrogen. However, when the two elements are used together, they show a complimentary interaction and the yield increase is greater than when either element is used alone. The yield of Coastal Bermuda was doubled each year in a 2-year test by the use of 30 pounds of nitrogen and 60 pounds of phosphoric acid per acre. Buffalograss and Caucasian bluestem responded equally as well.

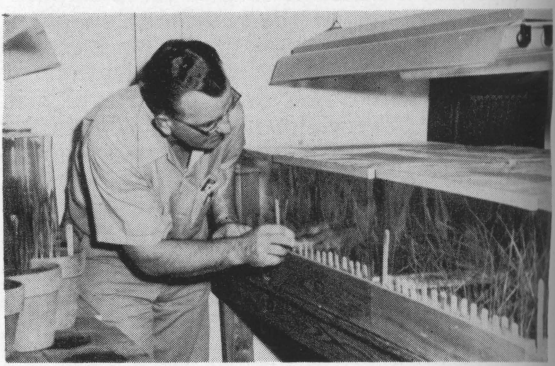
INSECT CONTROL

Greenbug

Greenbugs can wipe out an entire small grain crop, as evidenced by their worst attack in 1952. An estimated 61,000,000 bushels of grain valued at $38,000,000 were destroyed in Texas and Oklahoma. Present methods of control are not always economical, but research is underway in a special insectary at the Denton station to develop small grains which are resistant to the greenbug.

Tests here include 4,998 varieties of oats from the "world" collection, and many varieties of wheat and barley. Some barley crosses show promise of being resistant, and a selection of wheat resistant to the greenbug is being crossed with some of the widely planted varieties to incorporate greenbug resistance. To date no resistant oats have been found.

New chemicals also are tested as a possible economical control measure.



Intensive studies are made for insect resistance of small grains.

Winter Grain Mite

The winter grain mite has developed into a serious pest of fall-sown small grains. Recent research at this station shows that damaging mite infestations develop after continuous cropping of small grains. The most effective and economical control now is the use of a crop rotation system in which small grains are not planted successively in a field for more than 2 years.

Heavy mite infestations can be controlled by spraying with one-fourth pound of parathion (25 percent emulsion) per acre. Best results have been obtained with ground spraying equipment.

Sweetclover Root Borer

A study of the sweetclover root borer was begun at the Denton station after it did serious damage to biennial sweetclover in the North-Central Texas area in 1950. Prior to that year it had been a pest of weeds and little was known of the insect or its control.

Since the study began, however, the borer has not been a problem in the Denton area, probably because of drouth and practically no biennial sweetclover. Further research will be done if and when it again becomes a factor in biennial sweetclover production.

studied.

The life histories and control of other small grain insects and mites also are being

COTTON

Varieties

Cotton is the No. 1 cash crop in the Denton area and research information is in demand regarding the yield, staple and storm-resistance of cotton varieties. Farmers also want to know more about the stripper characteristics of cotton varieties as the number of mechanical cotton strippers increases.

A 5-year performance of cotton varieties indicates that no one variety consistently produces the highest yield in this area. In fact, only 70 pounds of lint per acre separated the top 18 varieties. Thirteen of the 29 varieties tested in 1955 had staple length measuring 1 inch or more and 22 varieties

graded middling or better. In storm resistance quality tests there was a wide range of loss of seed cotton from falling out before late harvest. Losses ranged from 6 pounds of some varieties to 396 pounds of other varieties.

Plant Population

A population of 40,000 plants per acre (one plant every 4 inches) in 40-inch rows has proved the most desirable when mechanical strippers are used. Tests show that the use of mechanical strippers results in a saving of $20 to $30 per bale over hand harvesting.

SWEETCLOVERS

Growth and Management

Madrid, a biennial, and Hubam, an annual sweetclover, have produced outstanding yields of forage and seed in tests at the Denton station. Hubam is better adapted to heavier blackland soil and is recommended for use in a 2-year rotation with cotton or corn. This rotation also has been successful in decreasing cotton root rot and is widely

Hubam, an annual sweetclover which produced outstanding yields in tests at the Denton station, is recommended and widely used in a 2-year rotation with cotton or corn in heavier blackland soil. Hubam helps in control of cotton root rot and building soil fertility.

planted for adding fertility to the soil. Madrid has proved excellent in rotation with other crops, for grazing the first year and for a seed crop the second year. Madrid was first tested at the Denton station after its introduction from Spain.

An application of 300 pounds of superphosphate per acre produced 30.9 percent more dry forage (including roots) than did unfertilized Madrid sweetclover. The yield per acre where fertilized was 4,720 pounds of dry matter, compared with 3,610 pounds where unfertilized. Approximately one-third of the plant is in the root system. The clover root borer reduced the acreage of Madrid sweetclover in the Denton area. The insect, noted first in 1950, has been found only in biennial sweetclover.

SOIL SCIENCE

Cropping Systems

A rotation including oats, corn, alfalfa, Madrid sweetclover and alta fescuegrass was established in 1952 to determine the effects of soil characteristics on cropping systems, and to determine a suitable rotation for the Grand Prairie area. The first test was completed in 1955 and no system tried showed advantages over a corn and oat rotation system.

A thorough knowledge of soil structure is important in crop production.

OIL CROPS

New varieties and strains of plants are tested continuously at Denton in an effort to find new and economical sources of farmer income. Much progress has been made with oil crops and their future for profitable production in the area appears promising.

Sesame

The highly recommended variety of sesame in tests conducted to date is Rio, a new non-shattering variety developed and released by the U. S. Department of Agriculture and the Texas Agricultural Experiment Station. It is adapted to mechanical harvesting.

Soybeans

Strains and varieties of soybeans have been tested at the Denton station for several years; however, no variety has proved sufficiently satisfactory and consistent in yield to recommend to producers.

Flax

Flax varieties have been tested for a number of years. They perform satisfactorily from spring seeding, but their yield in the Denton area is not high enough to compete with small grain as a source of farm income.

PILOT PLOT DEMONSTRATIONS

Pilot plots were begun by the Denton station in 1948 in cooperation with the Texas Agricultural Extension Service to speed the application of research to farms in the Sherman area of North Texas. Good results have been obtained in improving cultural practices and increasing crop yields on individual farms.

Small grain research has shown farmers how they can double their wheat and oat yields per acre. Grayson county farmers, among the first to apply the recommendations, now can add an "extra" $1,500,000 to the county's economy annually by proper fertilization. Collin and Grayson county farmers have increased nitrogen fertilizer purchases nearly 200 percent in the past 2 years.

Alfalfa production was moved from bottomland to upland by Grayson county farm-

Special equipment is used in off-station (pilot plot demonstrations) fertilizer tests.

ers as a result of pilot plot demonstrations. Annual applications of phosphorus are largely responsible for producing and maintaining upland stands of alfalfa. "Fertilizer factorials" are conducted on upland soils of Grayson and Cooke counties to find a way to expand the production of alfalfa on North Texas farms.

An expansion of hybrid sorghum research through pilot plot farms is planned by this station. Results so far indicate farmers in the area can compete with other areas in the production of sorghum grain. Yields of 5,000 pounds of grain or more per acre are obtained. Future tests will determine which hybrid sorghums may be best in the farm economy of North Texas.

More than one-third of the cotton in the Gunter-Southmayd section of Grayson county is defoliated and harvested mechanically. The first mechanical harvesting demonstrations in that county were conducted in 1950.

To increase cotton yields, fertilizer demonstration tests have been conducted on many farms. Application of phosphorus gave a slight increase. However, the application of phosphorus on Houston type soil was not economical, since an increase of only about 60 pounds of seed cotton per acre was produced. Yield increases have not been consistent following applications of nitrogen and potash. On low-lime, low-phosphorus content soil, yield of cotton increased about 200 pounds per acre following an application of 60 pounds of phosphoric acid an acre.

MISCELLANEOUS

Corn Hybrids

Corn hybrids are tested annually at the Denton station to determine their adaptation to the area. In tests during the last 5 years, Texas 26 and 28 have averaged 32.3 bushels per acre, compared with 19.1 bushels per acre for the two leading open-pollinated varieties.

Texas 15W, Texas 17W and TRF3, have been the highest yielding white corn hybrids.

Corn Inheritance and Improvement

Several hundred experimental crosses and preliminary yellow and white crosses of corn are tested annually to develop better hybrids for Texas conditions. The information gained helps plant breeders to determine the high yielding hybrids for various corn growing areas.

Grain Sorghum Hybrids

Grain sorghum production is increasing rapidly. Varieties and hybrids are tested annually to determine the best for the Denton area. Some newer outstanding varieties are Redbine 66, Combine Kafir 60 and Plainsman. However, new hybrids, tested and soon to be released, produced yields significantly higher than the varieties now planted.

Fence Posts

Five different kinds of fence posts are being tested at the Denton station in cooperation with the Texas Forest Service as a part of a statewide fence post service test. The posts include cedar, pine treated with pentachlorophenol, pine treated with creosote, bois d' arc and post oak. The test was begun in 1952 to determine the length of serviceability and the ability to hold staples.

STATE-WIDE RESEARCH

The Texas Agricultural Experiment Station is the public agricultural research agency of the State of Texas, and is one of nine coordinated parts of the Texas A. and M. College System.

The Main Station and headquarters are located at College Station, with 21 substations and 9 field laboratories located throughout major agricultural areas of Texas. In addition, 14 cooperating stations are owned by other agencies, including the Texas Forest Service, the Game and Fish Commission of Texas, the U. S. Department of Agriculture, University of Texas, Texas Technological College and the King Ranch. Some experiments are conducted on farms and ranches and in rural homes.

The Texas Agricultural Experiment Station is conducting about 375 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.

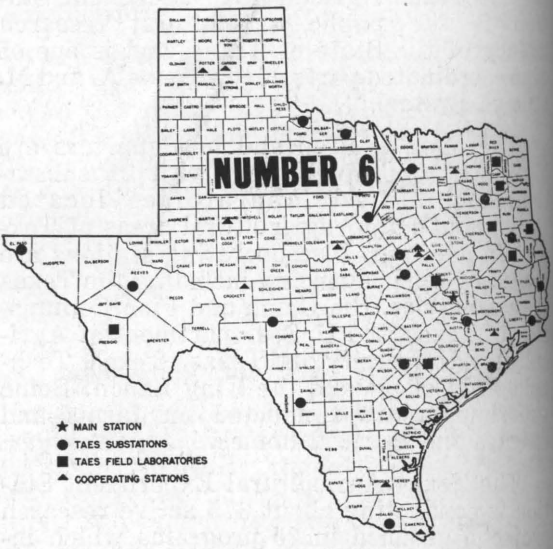
ADMINISTRATION

R. D. LEWIS
Director

R. E. PATTERSON
Vice 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.

Agriculture up to now usually has kept abreast of demand. But continued agricultural research is necessary to point the way toward maintaining and improving our productive resources, improving quality, lowering costs of production, expanding markets, devising new and better methods for growing, processing and distributing 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.*