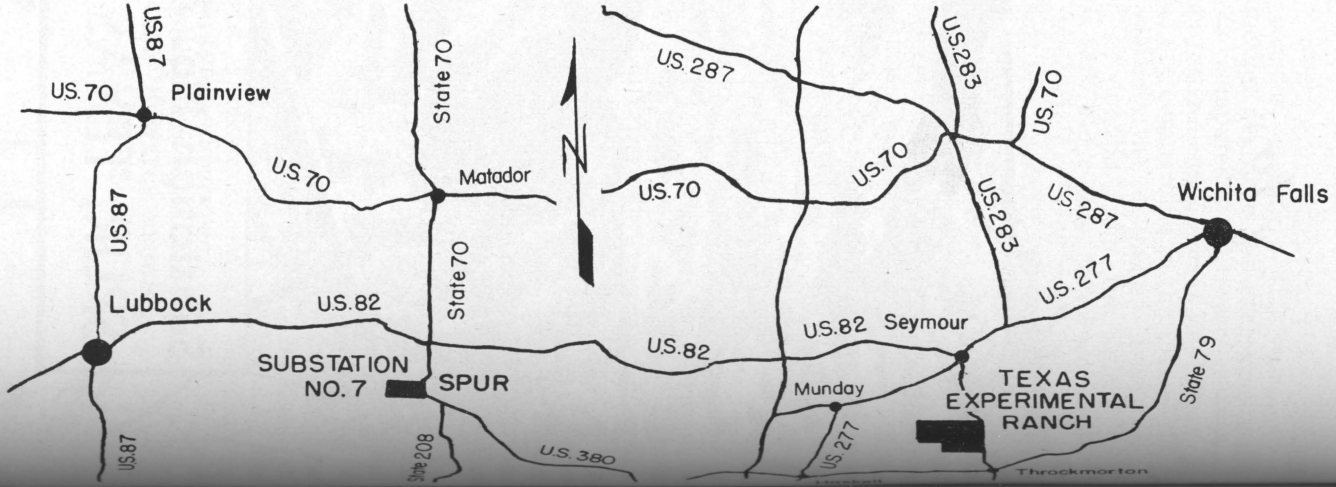
Welcome to

THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXPERIMENT STATION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Matador
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SUBSTATION
NO. 7
SPUR
US.87
State 208
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US.287
US.277
Wichita Falls
US.82
Seymour
Munday
US 277
TEXAS
EXPERIMENTAL
RANCH
State 79
Throckmorton

Welcome

to the

ROLLING PLAINS EXPERIMENT STATION

Substation No. 7 - - Spur

Substation No. 7 was established one mile st of Spur in Dickens County on December 1909, to develop information on crops and tural practices for the red and brown soils the Rolling Plains. The need for such in- mation had been increased greatly by the le of Spur Ranch holdings to farmers after e turn of the century. S. M. Swenson and s initiated the establishment of the station h a donation of 200 acres of land and $2,500 cash to the State of Texas. The station now mprises 1,442 acres of land, with 600 acres in ltivation and 822 acres in native grassland.

The Texas Experimental Ranch, a unit of bstation No. 7, was established 10 miles north Throckmorton, Throckmorton County, in 8. The Swenson Land and Cattle Company mporarily provided a 7,100 acre tract and the tle needed for the project. A group of ranch- en and businessmen formed an advisory com- ittee to help initiate the project and raise nds through private donations to finance con- uction of fences, stock water tanks and other cilities.

The total area of the Rolling Plains is ap- oximately 24 million acres of rolling-to-rough pography and mixed grassland vegetation. ils range from coarse sands to tight clays over- ing red bed clays and shales. The principal imax grasses are mixtures of big and little uestem, sand bluestem, sideoats grama, Indian- ss and switchgrass on the more sandy soils. deoats grama, blue grama and buffalograss e dominant on the tighter soils. Mesquite is common invader on all soils while shinnery k and sand sagebrush are more common on e deep sands.

Rainfall at the station has averaged 20.5 ches over a 48-year period with a high of 42.8 ches recorded in 1941 and a low of 6.8 inches 1956. On the average, the first killing frost

Main entrance to Substation No. 7.

in the fall occurs on November 4, and the l killing frost in the spring occurs on April Thus the growing season averages 215 d Temperature extremes of 114 degrees and degrees were recorded in June, 1924, and F ruary, 1933, respectively. The elevation at t station is 2,274 feet above sea level.

Early work at the station showed that co ton, grain and forage sorghum and several le gumes could be grown in favorable years. Sinc rainfall was the chief limiting factor in cro production, research was initiated to develo methods for the conservation and efficient uti ization of water. Information developed from these studies has been used widely throughou the state and nation, as well as in many foreig countries. Personnel connected with the pro ject played an important role in the establish ment of the Soil Erosion Service, the forerunne of the Soil Conservation Service. The first soi and water conservation action programs dre heavily on information developed at the station

Abundant yields of grain and forage sor ghum on the Rolling Plains far exceeded loca market demands although much feed was re quired to maintain work stock. Feeding ex periments were started in 1919 in an effort t utilize these home grown feeds in local livestock feeding. Lambs were used in the first test and steers were included the next year in comparing the nutritive value of grain sorghum with corn These tests showed that grain sorghum had ap proximately 95 percent of the value of corn in rations for lambs and steers.

Later experiments with vitamin A, hormones antibiotics and tranquilizers showed these feed

ditives increased gains and feed efficiency, re-ting in higher profits for livestock produc-

The Rolling Plains Experiment Station has neered in chemical, biological and mechan-l methods of brush control. As a result of s work, ranchers have sprayed several million es of brush with herbicides. Present research directed toward the finding of a more eco-mical and effective herbicide of a less haz-ous nature for aerial application.

New research information is presented rough bulletins, conferences and at special ld days in the spring and fall to keep farmers d stockmen informed of the progress made in e solution of various problems. Visitors are ways welcome. The mailing address is Box 74, Spur, Texas, and the telephone number CR 2-4451.

PERSONNEL OF SUBSTATION NO. 7

Paul T. Marion, *Superintendent*

William P. Hatchett, *Junior Agronomist*

Earl D. Robison, *Assistant Agronomist*

Eugene E. Hughes, *Assistant Range Specialist*

William J. Waldrip, *Assistant Range Specialist,* Throckmorton County

Dorabel G. Grimes, *Secretary*

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John A. McLemore, *Technician,* Throckmorton, County

WATER AND SOIL CONSERVATIO

Since water is the chief factor governing c production on the Rolling Plains, research h been directed toward the development of me ods and practices that permit maximum u ization of rainfall by reducing losses due to r off, evaporation and growth of undesira weeds and brush. Some of these practices a used on native grassland as well as on croplan

Contouring and Terracing

Cotton has been planted continuously for years on land with 0.5 of 1 percent slope in o der to study the effects of contouring and te racing on runoff and yields of lint cotton. Co tour rows reduced runoff from 2.62 inches a nually to 1.89 inches and increased the produc tion of lint cotton 31 pounds per acre ove straight rows running with the slope. Runo was completely eliminated with closed level te races and the production of lint cotton was in creased 70 pounds per acre.

Annual returns per acre were increased $8.4 by contour rows and $17.29 by closed level te races over straight rows running with the slope Over the 30 year period, fields with closed lev terraces produced $518.71 more lint and cotton seed per acre than unterraced fields farmed with the slope. Many thousands of acres have been terraced in Texas and throughout the Great Plains as a result of this work.

Land Leveling

Although terrace systems increased cotton production, water distribution over the fields was generally uneven with wet spots in the channels and dry areas below the terraces. Leveling of terrace intervals on 0.5 to 2 percent slopes was initiated in 1953 to improve moisture distribution. Production of lint cotton was increased from 121 pounds to 151 pounds per acre. The addition of supplemental runoff water to leveled terrace intervals further increased lint production from 151 pounds to 180 pounds per

nch leveling increases yields of cotton through ter distribution of water.

re. The cost of leveling averaged $17.90 per re, with variations according to the degree of ope.

The practice of bench leveling between par- el borders was initiated in 1958 on slopes nging from 0.5 to 1 percent. Cotton produc- on was increased an average of 73 pounds of nt per acre over the 2-year test. Bench level- g and construction of the parallel borders cost pproximately $19.50 per acre.

Crop Residue Management

Crops and crop residues have a striking influence on runoff, moisture penetration and soil losses from wind and water erosion. The addition of 2 tons of cotton burs per acre reduced runoff 59 percent when the burs were turned under to a depth of 4 inches and 80 percent when the burs were left on the surface. Runoff averaged 5 acre inches on fallow land with a 2 percent slope during a 25 year period. Cotton, on a similar slope, reduced runoff 28 percent. Grain sorghum reduced runoff 45 percent, but buffalograss was still more effective with an 81 percent reduction.

CROP PRODUCTION

In addition to the cotton produced in water and soil conservation experiments, wheat, grain sorghum and forage crops are grown for cash crops and livestock feed. Several cultivated pasture grasses are grown for grazing crops.

Wheat

Wheat is produced on the more sloping tivated land. Major emphasis is placed on bed preparation to increase moisture pe tion and reduce erosion. Stubble mulch are used to leave a high percentage of crop dues on the surface of the soil. Even these practices plus systems of fallow and ghum rotations, yields have averaged onl bushels per acre because of frequent crop ures. Yields up to 33 bushels per acre been produced following good fall and sp rains.

Forage Sorghum

Forage sorghum is grown on a terrace tem designed to utilize runoff water fro 1,000 acre watershed. In years of average r fall, forage yields of 8 to 10 tons per acre produced and stored in trench silos. Res silage is carried over for use in dry years wh feed supplies are scarce and costly. The c of producing and storing silage averages $4 $5 per ton and is valued at twice that amou when fed to beef cattle.

Complete crop failures seldom occur a forage crops are neither as expensive nor hazardous to produce as cotton. The princip varieties produced on dryland are Sumac, Atl Sourless (African Millet) and Honey. Gra sorghum has also been used for silage, but does not produce as much tonnage as forage sweet sorghum. Corn for silage may be gro

Forage sorghum is the most dependable crop of the area.

nder irrigation, but is not recommended for ryland. Several new hybrid forage sorghums ave been tested and yields from these varieties ave been higher than yields from the above arieties on both dryland and irrigated fields.

Grain Sorghum

Grain sorghum is second to cotton as a cash rop on the Rolling Plains. Most producers eed only a portion on the farm, selling most f their crop for cash. All of the grain sorghum produced on the station, however, is fed o livestock and an additional 100,000 pounds r more is purchased annually for cattle feeding experiments. Greater returns are made rom grain fed to livestock than from the sale f grain for cash.

Yields per acre range from 500 to 1,500 ounds on dryland and from 3,000 to 4,000 ounds on irrigated land in Dickens county. rop failures are frequent and, unlike forage orghum, there is very little feed which can be alvaged by grazing when grain yields are too ow to harvest.

The most popular grain sorghum hybrids lanted in the area are RS 610, RS 608, DeKalb 56a, Tex 620 and AMAK-R10. Others include ombine 7078, Plainsman, Martin, Redbine-60 nd Combine Hegari. Unlike other grain sorghums, Combine Hegari often produces enough orage for silage, bundle feed or for grazing hen grain production is low.

Cultivated Pasture Grasses

Sudan grasses have been used for temporary ummer pasture to supplement native grasses n some years. Gains of 1 to 1.5 pounds per ead daily have been made for periods of 60 o 150 days. The perennial Sudan known as orgrass produced more forage and provided a onger grazing season than either common or weet Sudan.

Blue panicum has been used as a cultivated asture grass since 1954. The pasture has been tocked at the rate of 1 head per acre in favorable years and has produced high gain per acre. Blue panicum was less palatable when grown

Test plot of Premier sideoats grama.

on heavy clay soils and cattle made lower gains than those on Sudan pasture.

Sorghum Almum was used in a forage production and grazing test. While it was less palatable than Sudangrass, it produced more forage and provided a longer grazing season.

BRUSH AND WEED CONTROL

Mesquite

Mesquite trees, shrubs and seedlings in scattered stands, odd areas, fence rows and along rights-of-way have been controlled economically by individual plant treatment. Invading stands of seedlings and widely scattered shrubs may be controlled effectively at low cost by hand grubbing, but a crawler type tractor with a front mounted stinger blade is more satisfactory on open stands with 50 to 100 trees per acre.

Effective control of thin stands of single to few-stemmed trees growing on porous, gravelly or rocky soil may be obtained by pouring 1 pint to 2 quarts of kerosene or diesel fuel around the base of each tree. Enough oil to wet the bark and soil to the lowest sprout buds on underground stems should be used. These buds are normally less than 8 inches below the surface, but may range to depths of 2 to 3 feet where wind blown sand and silt deposits have built up. This treatment is effective during any season when the surface soil is dry.

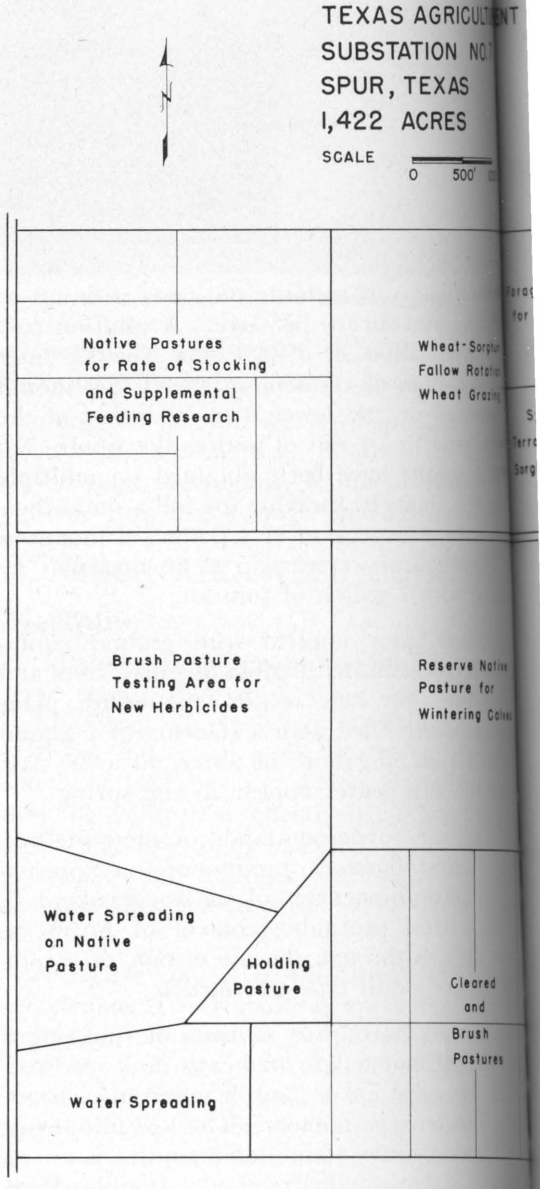
Basal application of 2,4,5-T has proved effective in the control of scattered mesquite shrubs.

Basal spray is suitable on areas with up to 25 trees and shrubs per acre. A solution containing 1 gallon of 2,4,5-T low volatile ester per 50 gallons of kerosene or diesel fuel should be sprayed on the lower 8 to 12 inches of the basal stems to a point of noticeable runoff. Excellent results have been obtained on multiple stemmed plants by spraying the soil around their base with a suspension of 1 pound of monuron in 10 gallons of water. Up to 20 trees may be treated with 1 gallon of solution.

Foliage spray applied with ground equipment is economically feasible for small trees and seedlings. For best results, the entire plant should be drenched with a solution of 1 pound of 2,4,5-T in 50 gallons of water, 40 to 90 days after the first leaves appear in the spring.

Moderate to dense stands of mesquite seriously effect livestock production on approximately 35 million acres of native grassland in Texas. Most profitable control of brush on these areas is through the use of one, or a combination of swath type treatments.

Chaining or cabling consists of dragging a 300 to 400 foot length of heavy duty chain or cable extended in a loop between two heavy duty, crawler type tractors. The low initial cost of thinning heavy stands of mesquite is an attractive feature of this method. Double chaining—covering an area from opposite directions—will break almost all above-ground growth and sprout 10 to 20 percent of the large trees on sandy sites when soil moisture is good.


TEXAS AGRICULTURAL
SUBSTATION NO.
SPUR, TEXAS
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Native Pastures
for Rate of Stocking
and Supplemental
Feeding Research
Wheat-Sorghum
Fallow Rotation
Wheat Grazing
Brush Pasture
Testing Area for
New Herbicides
Reserve Native
Pasture for
Wintering Calves
Water Spreading
on Native
Pasture
Holding
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and
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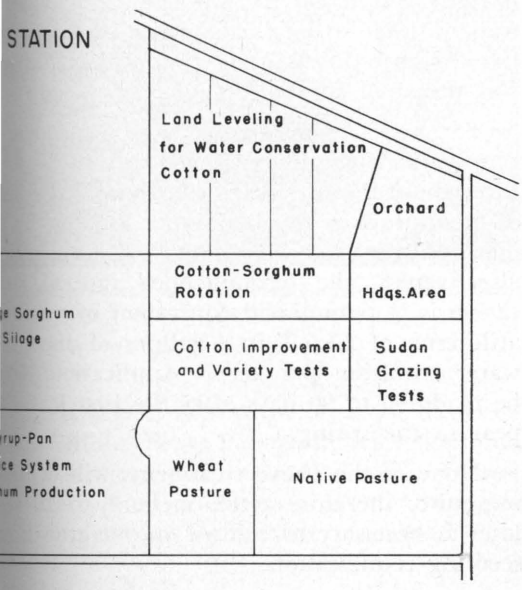
Water Spreading


STATION
Land Leveling
for Water Conservation
Cotton
Orchard
Cotton-Sorghum
Rotation
Hdqs.Area
e Sorghum
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and Variety Tests
Sudan
Grazing
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ce System
um Production
Wheat
Pasture
Native Pasture

Heavy duty brush cutters have been with much success, particularly where mes was intermingled with other brush species.

Root plowing has been profitable on having deep, fertile soil when sufficent moist was available to establish highly productive tive or introduced grasses, or when the l was prepared for cultivation.

Extensive experimental studies, conduc cooperatively with ranchmen at 40 locati throughout Texas since 1949, show that cont of mesquite may be obtained at low cost by ial application of chemicals. For economy a effectiveness, the recommended rate of app cation is ½ pound acid equivalent of a low v atile ester of 2,4,5-T in 4 gallons of diesel fu water emulsion per acre. Application shou be made 40 to 90 days after the first leaves a pear in the spring.

None of the above treatments will eradica mesquite, therefore retreatment 3 to 10 yea later is necessary to control sprout growth an seedling reinfestation.

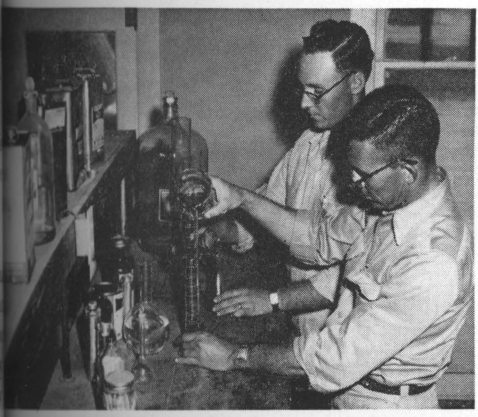
Benefits From Mesquite Control

Annual grazing trials, using yearling steers at a moderate stocking rate, have been conduc ted on 4 cleared and 4 brush pastures from Ma 1 to October 1 since 1945. These tests showed that control of moderate stands of mesquite in creased steer gains 28 pounds for an average o 4.7 additional pounds of beef per acre. The labor and cost of handling livestock on cleared pastures was considerably less than on brush pastures.

Sand Shinnery Oak

From 80 to 95 percent control of sand shinnery oak has been obtained with 2 or 3 annual applications of ½ pound 2,4,5-T or silvex in a 1:3 diesel fuel-water emulsion at 4 gallons per acre. For best results, applications should be made between May 1 and June 15 when growing conditions are good.

Deferment of treated areas following first and second treatment is necessary to insure grass recovery.



ceaseless search is conducted for more economical, re effective and safer herbicides.

ucca

Up to 70 percent control of yucca has been tained in the Texas Panhandle with ⅔ pound silvex in diesel fuel, or a 1:3 diesel fuel-water ulsion applied at the rate of 4 gallons per e. Applications were made after June 1 in t area.

rickley Pear

Although prickley pear is not a serious pest grazing land in the Rolling Plains, it is of- objectionable on local sites. From 90 to 98 cent control has been obtained with oil ays containing either 2,4,5-T, silvex or oil uble 2,3-6 trichlorobenzoic acid at 2 to 4 unds acid equivalent per 100 gallons of die- fuel. Applications should be made any e from early spring to early fall when the soil is dry. Thorough coverage of the plant th spray solution is essential for effective con- l.

hnsongrass

Sodium chlorate applied as a dry salt to ex- ed soil and roots at the rate of 2.5 pounds square rod, or Dowpon applied as a foliage ay at the rate of 1 pound to 5 gallons of ter will effectively control Johnsongrass when ed as a spot treatment. Sodium chlorate is a l sterilizer and should be used with caution. wpon is most effective when grass is young d actively growing.

Pasture Weeds

In years of good rainfall following peri of drought, weed competition seriously hamp grass recovery. Under such conditions, good sults have been obtained at the station by spr ing potentially productive areas with ½ pou per acre of 2,4-D or 2,4,5-T. For best resul with either ground or aerial equipment, tre ments should be made early in the year wh plants are small and actively growing. Studi are now in progress on aerial application herbicides for perennial broomweed contr Results have been erratic and no recommend tion for its control can be made at the pres time.

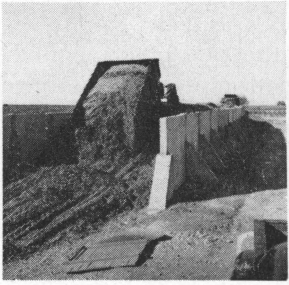
Generally, all broad leaf plants are suscep tible to herbicide spray materials. Observation should be made of the surrounding area fo nearness of susceptible crops before spraying fo weed or brush control.

BEEF CATTLE

Beef cattle experiments were divided into three phases from 1941 to 1959, (1) winter maintenance, (2) summer grazing, and (3) finishing in the feedlot. Small calves weighing 300 to 400 pounds were purchased in the fall of the year for use in wintering projects. Then they were used in summer grazing studies on native and cultivated pastures before going into the feedlot as long yearling steers weighing 700 to 800 pounds.

Winter Maintenance of Calves

Roughage for wintering calves was provided by small grain and native pastures, grain and forage sorghum stalk fields, sorghum silage and



From 800 to 1,200 tons of sorghum silage is stored and fed each year.

undle feeds. Cottonseed hulls were used with mall amounts of cottonseed meal or cake and ain to grow out calves when home grown feeds pasture were not available.

Wheat pasture is high in protein and usu- ly supplemental feed, other than a small mount of dry roughage, is unnecessary when oisture conditions are good. Over a 14-year eriod daily gains averaged 1.65 pounds during razing seasons of 60 to 130 days, with the ex- eption of 3 years when the crop was a complete ailure.

Native grass provided the longest and most eliable method of wintering calves. It was profitable to feed 1 to 2 pounds of cottonseed ake per head daily most of the time, and the alves made an average daily gain of .8 pound ver periods of 100 to 150 days. Self-feeding a -1 mixture of cottonseed meal and salt saved abor without any reduction in gains.

Sorghum stalk fields often provide good graz- ng for short periods in the fall and winter. The verage grazing season lasts 64 days and the cal- es gained .92 pound per head daily when fed to 2 pounds of cottonseed cake.

High roughage rations of silage or ground undles were used to maintain calves in the eedlot. In addition to these roughages the cal- es were fed 1 to 2 pounds of cottonseed meal, nd when alfalfa hay was cheap it was profit- able to feed 1 to 2 pounds of alfalfa per head daily. These rations produced daily gains of 44 pounds over periods of 90 to 140 days.

Summer Grazing Studies

Steer yearlings were used in summer grazing rials on native pasture from 1942 to 1951. A

Summer grazing studies on native grass.

moderate rate of stocking to utilize approximately 50 percent of the grass increased gains 54 pounds per head and 1 pound per acre over a heavy stocking rate where over 75 percent of the grass was utilized. Rotation grazing on a monthly rotation system did not increase production over continuous grazing. This last system allowed the greatest improvement in the better species of grasses. Contour listing at 7 inch intervals increased production slightly and improved forage composition, especially in dry years.

Feedlot Experiments

The first feeding tests were conducted on the station in 1918-19 with sheep and beef cattle to compare sorghum grain with corn. These experiments were among the first to prove that sorghum grain had at least 95 percent of the value of corn in fattening rations. Other experiments proved the value of forage sorghums which produce an abundance of forage in good years and generally are more dependable than grain sorghum in the Rolling Plains. High roughage rations were developed to use these home grown feeds. Rations consisting of 2-4 lbs. cottonseed meal, 6-10 lbs. sorghum grain, 5 lbs. alfalfa, and 40-50 lbs. sorghum silage or 15-20 lbs. chopped sorghum bundles produced Good to Choice grade beef in 112 to 140 days.

Numerous experiments have been conducted to determine the value of whole cottonseed and cottonseed by-products in beef cattle rations. Two pounds of whole cottonseed were used to replace 1 lb. of cottonseed meal and 1 lb. of grain when seed were cheaper than meal and grain. Cottonseed meal and hulls were a popular ration but cattle became night blind and went off feed after 90 to 120 days on this feed. In 1935 it was discovered that the blindness and loss of appetite was due to vitamin A deficiency. When alfalfa hay (containing vitamin A) was added to the ration, cattle could be fed meal and hulls indefinitely. Much of the work on vitamin A deficiency was done at this station between 1935 and 1949.

Heifers were used in many feeding trials. Their initial cost was usually 2 to 3 cents less

per pound than steers and they finished quicker than steers. It was a good practice to feed heifers when the feed supply was limited. There was no advantage in spaying heifers in comparisons with open heifers and steers.

Feed Additives

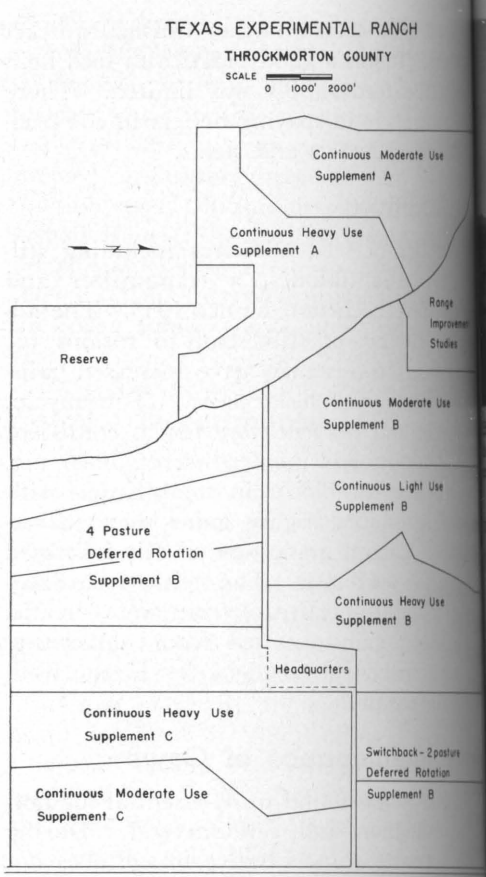
A number of feed additives including stilbestrol, three antibiotics, a tranquilizer and Tapazole have been tested since 1953. The addition of 10 mg. of stilbestrol to rations for yearling steers consistently gave increased gains of ⅓ to ½ lb. per head daily. Terramycin, Aureomycin and Ilotycin were not as consistent when fed alone, but the feeding of 70-80 mg. of any of these antibiotics in combination with stilbestrol produced higher gains than stilbestrol alone. Carcass grade was usually increased by feeding an antibiotic. The results from feeding the tranquilizer hydroxyzine were erratic, but increased gains resulted from implanting steers with stilbestrol and Synovex in the feedlot and on pasture.

Winter Maintenance of Cows

Vitamin A was found to be essential for normal reproduction and calf survival. During drouths and dry winters native forage does not supply the minimum requirements of vitamin A and this deficiency caused lower calf crops. Cows fed cottonseed cake fortified with 5,000 I. U. of vitamin A per 100 lbs. of body weight weaned 5 percent more calves averaging 13 lbs. heavier than cows fed regular cake over a 4-year period. Another project is being conducted to determine the value of low, moderate and high levels of energy supplied by different amounts of grain and cotonseed meal to cows wintered on pasture and in the feedlot on a silage ration.

TEXAS EXPERIMENTAL RANCH

The major objective of research at the experimental ranch unit is to determine methods for improving the efficiency of production of feeder calves and yearlings on native grassland. Because of the variation in climatic conditions and forage production from year to year, three different flexible rates of stocking will be stud-



Supplement A – Nothing
Supplement B – 3 pounds cottonseed cake every other day
Supplement C – 6 " " " " " "

ied based upon levels of forage utilization. Th will consist of maintaining a minimum numb of high quality cows year-round with year- year adjustments made by holding over calv in good years and culling during drouths.

Studies will be made of the influence of wi ter maintenance of cows at different levels o feeding and with different feeds, protein supp ments, vitamins, minerals and other feed add tives. Systemic insecticides and other mea of parasite control will be observed under rang conditions.

Continuous or year-round grazing will b compared with two different systems of defe red-rotation grazing at the moderate rate o stocking. The rotation systems studied hav been designed around the physiological require

Efficient production of feeder calves and yearlings is the major objective of research at the experimental ranch unit.

ments of plants with rest period allowances for plants to gain vigor and set seed.

Two sections of land will be used for studies of range improvement practices such as reseeding, brush and weed control, range pitting and other soil and water conservation practices.

Detailed records of vegetation and livestock production will be maintained on all experimental pastures. It is estimated that the project will require a minimum of 10 years to produce the desired information.

Evaporation Study

A set of twin tanks was constructed on the ranch to study a method of retarding water loss from stock ponds and lakes by reducing evaporation. The method being tested is designed to maintain a thin film of an alcohol, hexadecanol,

Evaporation studies at the experimental ranch unit.

on the surface of the water. Construction of satisfactory dispenser of the material has been the major problem. Evaporation was reduced as much as 25 percent with a crude system of dispensing the alcohol, and greater effectiveness will be obtained when a satisfactory dispenser is designed.

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 8 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*

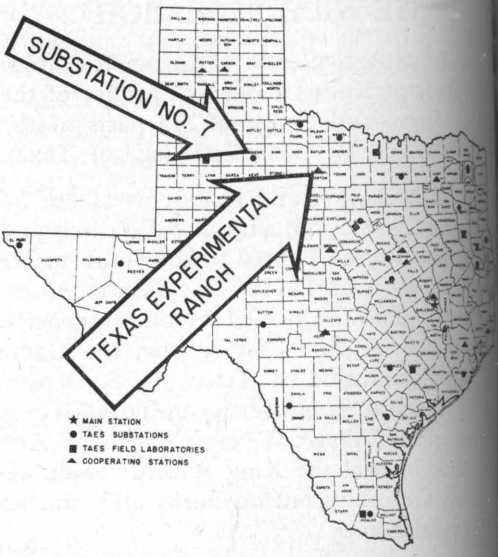
Roland J. Hildreth, *Assistant Director*

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.*