



- Fitting Beef Cattle into
- Central Texas Farming

LIBRARY

NOV 18 1957

New Mexico College of Agriculture and Mechanic Arts

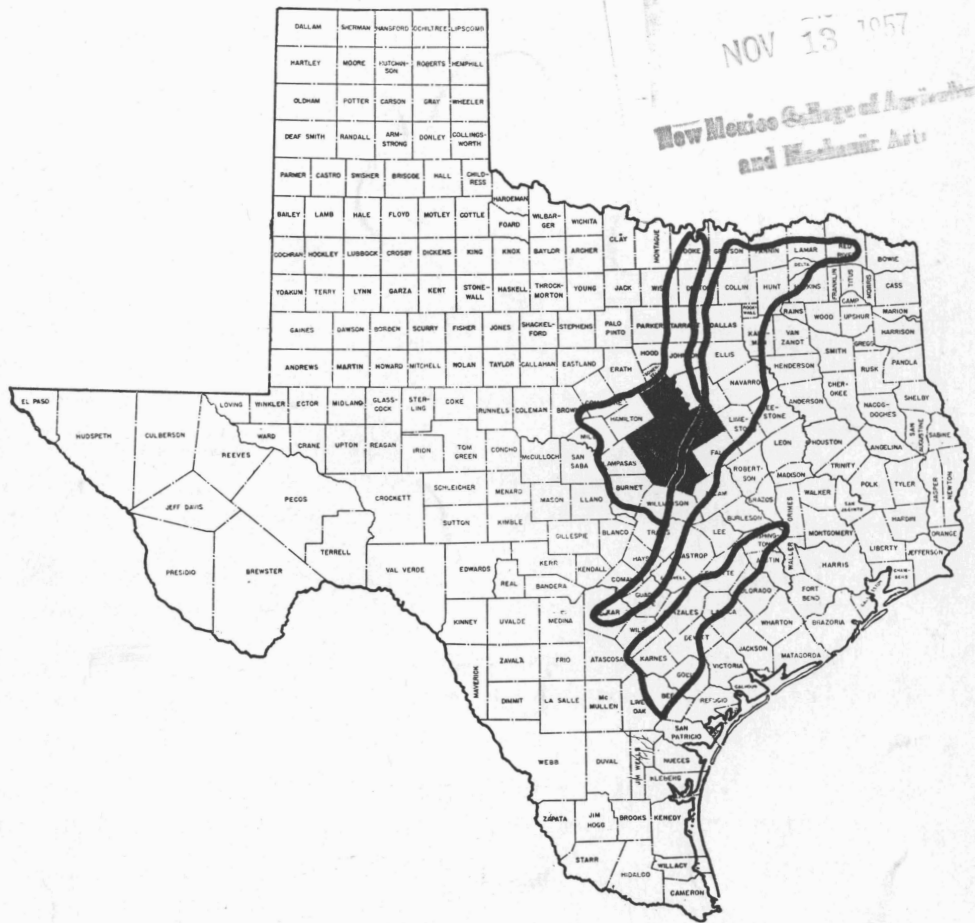


Figure 1. The heavy black lines show the approximate boundaries of the Blackland and Grand Prairies of Texas. The shaded part shows the locations of the four counties in which the study was made.

## PRACTICES ASSOCIATED WITH A SUCCESSFUL BEEF ENTERPRISE

Sound planning was important. For best results, the land-use program and cattle operations were planned to supplement each other.

An adequate supply of stock water was essential.

Ample feed reserves reduced costs. Farmers with the lowest costs used grazing most of the year.

Silage fed to stocker cattle produced economical gains.

Larger herds showed more efficiency. For instance, one bull was needed whether the herd consisted of 10 cows or 30 cows. Also, it took almost as much time to feed and care for 12 cows as it did for 24.

Successful operators maintained healthy herds, kept death losses low and obtained a high percentage calf crop.

Sheds and barns used for beef cattle operations were functional but inexpensive.

Price trends were important factors in buying and selling. Prices of stocker and feeder cattle usually are at or near the year's low during September, October and November. The local demand for butcher cattle was strong during the late winter and spring.

Calves on feed usually were marketed when they would grade Good or Low Choice. The demand for this quality of beef prevailed at the markets where most farm cattle were sold.

Fall calves (October, November and even December) were old enough to utilize considerable grazing during the lush spring season and were ready for market when prices for butcher calves usually were relatively high.

Research has shown that the use of high-gaining sires and the selection of high-gaining heifers for replacements would greatly increase calf weights at weaning and gains in the feedlot.

# Fitting Beef Cattle into Central Texas Farming

A. C. MAGEE, Professor

Department of Agricultural Economics and Sociology

**B**EEF CATTLE AS A PRODUCTIVE ENTERPRISE REPRESENT a relatively recent adjustment on many farms in the Blackland Prairie and also on the deeper, more productive soils of the Grand Prairie. In both instances, agriculture has been devoted mainly to cash crop production, primarily cotton and corn. For years, cotton accounted for about 90 percent of the cash farm income.

During recent years, more and more attention has been focused on problems of land use and soil management, and particularly on the control of excess water as a means of reducing soil losses through erosion. To provide orderly disposal of run-off water, most farmers have had to devote some land to sodded waterways.

Many farms include some low-yielding land that can not be cultivated profitably. In some instances this is low-lying or over-flow land. In other instances sloping and severely eroded land are included. In either case, such land can be protected best from further deterioration by being in permanent grassland. Research also has shown that soil management of much Central Texas farmland has been improved by including close-seeded grains, legumes and grasses in the cropping system.

The sodding of waterways, reseeding of land to permanent grasses and use of close-seeded crops have been a sizable land-use adjustment on many farms. These changes have resulted in a large increase in the amount of forage available for harvest or grazing. At the same time, the relatively recent shift from horse to tractor power did away with an important outlet for hay and for grazing.

High beef prices which prevailed during and immediately following World War II encouraged farmers to market grazing and forage through beef cattle. In many instances, these forage resources could not have been used except by grazing livestock.

This bulletin reports the results of a study of production, production requirements and costs and of practices associated with beef cattle on Central Texas farms. This study has been on farms where cash crops were the main source of income, but where a beef cattle enterprise has been added recently or where increased emphasis has been placed on beef cattle production. The farms studied were in McLennan, Bell, Coryell and Bosque counties (Figure 1). Data were ob-

tained on 40 farms during 1952-54. Additional information was obtained from 16 other farmer-stockmen in 1953 and 1954 concerning particular practices.

Of the 40 farms studied, 18 had less than 50 acres of permanent pasture, including both native and seeded grassland. With one exception, these farms were on Blackland Prairie soils and hereafter will be referred to as Blackland farms.

The remaining 22 farms averaged 173 acres of permanent grassland. All but one were on Grand Prairie soils and the group will be referred to as Grand Prairie farms.

## CAPITAL ITEMS ADDED FOR THE BEEF ENTERPRISE

On the Blackland farms studied, relatively recent adjustments and additional improvements were made as a result of adding beef cattle to the system of farming. Shed and barns were left over from the recent days of horsepower farming which could be remodeled to serve for beef cattle.

## CONTENTS

Practices Associated with a Successful Beef Enterprise .....	2
Introduction .....	3
Capital Items Added for the Beef Enterprise .....	3
Land Use on Farms with Beef Cattle .....	4
Grazing Production and Yields .....	4
Cow and Calf Enterprise .....	5
Production and Sales .....	6
Production Costs .....	7
Returns Above Costs for Cow Herds .....	8
Stocker and Feeder Calf Enterprise .....	9
Steers Kept for a Short Grazing Period .....	10
Steers Kept for an Intermediate Grazing Period .....	10
Steers Kept for a Long Grazing Period .....	11
Steers Fed in Drylot .....	12
Management Practices that Influenced Returns .....	12
Acknowledgments .....	15

Remodeling costs averaged approximately \$135 per farm. Each Blackland farmer had some stock water before the beef enterprise was added. However, in each instance, water facilities had been expanded recently. The usual practice was to build an earth tank at costs averaging about \$185 per farm. Government assistance often helped reduce costs to the farmer.

Some new fence was added and much of the existing fence was repaired in preparation for cattle. The expenditure for barbed wire fence averaged about \$125 per farm. Most men also added some electric fence. The average for Blackland farms was about a third of a mile purchased at a cost of \$70.

In several instances, the size of the beef herd had been expanded recently on Grand Prairie farms, but in all cases cattle had been run for a number of years previous to the study. There had been little remodeling of buildings to make them serve the cattle enterprise better, and in only a few cases had new buildings been added. However, fence improvements had been made recently at an average cost of about \$240 per farm. The cost of increased water facilities amounted to approximately \$175 per farm.

Farmers on both types of soils who practiced creep or drylot feeding of calves had the added investment for facilities in which to feed. The cost of a creep varied greatly. Some were made largely of materials already on hand at very little additional cost except the operator's labor. Other operators paid as much as \$120 for a creep. The extra cost for feed troughs and racks needed for feeding calves in the lot ranged from \$65 to \$100 per farm.

A beef cattle enterprise added materially to the farm investment. Cattle prices were high when the greatest expansion of beef cattle num-

TABLE 1. SUMMARY OF LAND USE WHERE THE SYSTEM OF FARMING INCLUDED BOTH CASH CROPS AND BEEF CATTLE, 1952-54

Item	Average land use on:				
		Blackland farms	Grand Prairie farms		
Farms studied	(no.)	18	22		
Permanent pasture:					
Native	(ac.)	23	160		
Seeded	(ac.)	12	13		
Cropland	(ac.)	189	202		
Farmsteads, roads, etc.	(ac.)	3	5		
<b>Total</b>	<b>(ac.)</b>	<b>227</b>	<b>380</b>		
Cropland use	Acres	Percent of total cropland	Acres	Percent of total cropland	
	Cotton	65	34.4	40	19.8
	Corn	18	9.5	21	10.4
	Sorghum grain	26	13.8	25	12.4
	Oats and oats-clover	46	24.3	56	27.7
	Wheat <sup>1</sup>	9	4.8	11	5.5
	Sorghum forage	6	3.2	14	6.9
	Other hay crops	6	3.2	8	3.9
	Sudangrass	5	2.6	11	5.5
	Idle and miscellaneous	8	4.2	16	7.9

<sup>1</sup>Includes a small acreage of barley.

bers occurred on Central Texas farms. A common practice among farmers of limited capital was to buy a few cows and keep heifers to add to the herd. Regardless of how the herd was acquired, there was an increase in farm inventory in proportion to the number of animals added.

#### LAND USE ON FARMS WITH BEEF CATTLE

A summary of land use for both Blackland and Grand Prairie farms is shown in Table 1. Although the acreage of native pasture differed greatly, the two groups averaged 12 and 13 acres, respectively, of seeded pastures, most of which consisted of grassed waterways.

Cotton was the most important cash enterprise on both groups of farms, particularly so on Blackland farms. Here the average cotton acreage ranged from 40 percent of the cropland in 1952 to approximately 30 percent in 1954 when allotments were in effect.

During the 3-year period, cotton accounted for an average of nearly 60 percent of the sales on Blackland farms. Cattle sales were next highest, averaging 15 percent of the total.

Cotton was relatively less important on Grand Prairie soils where more small grains and forage were grown. During 1952 and 1954, sales from cotton and from beef cattle averaged about the same for most of the Grand Prairie farms.

#### GRAZING PRODUCTION AND YIELDS

Grazing was obtained from four general sources: permanent pasture grasses, Sudangrass, small grains (largely oats) either alone or in combination with clover, and stalk fields or other crop residue. The days of grazing obtained per acre from the first three of these sources are shown in Table 2. In each instance, grazing days per acre are shown for cow herds and for stocker cattle. Grazing days per acre are not shown for stalk fields because of widely varying grazing practices and because of difficulties in associating grazing time with specific acreages.

Cooperating farmers reported that during much of the study grazing conditions were below average because of unfavorable moisture conditions. For this reason, it is believed that the data are conservative and that higher grazing yields often may be obtained. The amount of grazing obtained varied greatly from year to year, with relatively high grazing yields reported during 1953.

Even though grazing was for a shorter period of time, permanent Blackland pastures furnished about 40 percent more days of grazing per acre than did Grand Prairie pastures. Although the differences were not as pronounced, yields of other types of grazing also were higher on Blackland than on Grand Prairie soils.

On the average, an acre of Sudangrass furnished 3 to 4 times the number of days of grazing as did an acre of permanent grasses.

Small grains were seeded primarily for grain harvest on the farms studied. Under these conditions, grazing was incidental and not the major consideration. It is the general opinion of farmers in these areas that grain fields can be pastured moderately until about March 1 without affecting grain yields. Grazed in this way, an acre of small grain furnished about 20 days of grazing for a cow and about twice that number of days for stocker cattle. Where large fields of small grain grazing were available, the farmer usually bought steers rather than cows and calves. This is a source of feed that must be grazed as it is produced or the grazing potential is lost.

Frequently, some of the oats or oats-clover crop was utilized entirely for pasture. A few very high grazing yields were reported in 1953 with this practice. An acre of oats or oats-clover on Blackland that was used entirely as a pasture crop furnished about 3 months grazing for a mature cow. Less than two-thirds of an acre was needed to graze a stocker yearling for a similar time. Grazing yields on Grand Prairie soils were approximately 85 percent of Blackland yields.

Thirty-six of the 40 farmers kept a small herd of cows. Calves were either sold at weaning time, weaned and put in the feedlot for more weight and finish or were wintered as stockers and sold off of pasture the following spring or early summer. The four remaining cooperating farmers depended on buying stocker calves to utilize grazing or to put in the feedlot.

Results obtained with beef cow herds are discussed separately from those obtained with stocker and feeder cattle.

### COW AND CALF ENTERPRISE

Fifteen Blackland and 21 Grand Prairie farmers kept cows (Table 3). Blackland farms averaged 12 cows, or a cow to 3 acres of permanent pasture. A bull and 1 or 2 replacement heifers also were kept.

Grand Prairie farmers averaged 22 cows, or a cow to 8 acres of permanent grassland. A bull and 2 to 4 replacement heifers rounded out the average breeding herd.

The cow herds studied were made up of good quality grade animals. Registered bulls were used almost entirely. Most of the bulls were Hereford, Aberdeen-Angus or Shorthorn.

When available, cattle on both types of soil were grazed on small grains during the winter and early spring. Sometimes a small acreage of oats or oats-clover was fenced off and used entirely for pasture. Normally, permanent pasture grasses came on about the time cattle needed to be taken off of grain fields. Grain stubble usually was grazed when clover was present to come out after harvest. Without clover, some farmers pastured grain stubble; others did not. Fields with Johnsongrass frequently furnished considerable pasturage. Other grazing was largely from Su-

dangrass and from fields following harvest of crops such as corn and grain sorghums.

When moisture was favorable, some Sudangrass was planted on land following oats harvest. However, the acreage double-cropped in this way was small and was not included in the Sudangrass acreage shown in Table 1.

Blackland farms provided grazing for about 8.5 months of the year; with a larger amount of grassland, Grand Prairie farms furnished approximately 10.5 months of pasturage annually.

Hay was fed as needed to supplement pastures. The amount needed varied from year to year. A supply of 1.75 to 2 tons of hay per cow was a desirable reserve for the worst drouth years. Farmers with this reserve were able to avoid expensive winter feed bills. Normally, all forage used with beef cattle was homegrown, but during recent drouth years some of the men failed to provide sufficient hay reserve and found it necessary to purchase hay or cottonseed hulls. Because of proportionately less grazing from permanent pasture and greater need for hay, more Blackland farmers bought forage than did Grand Prairie farmers.

In each instance, some concentrates were fed to breeding animals during the winter. Some farmers depended entirely on cottonseed cake or commercial cubes; others fed homegrown corn and a few fed a combination of corn and cake.

During much of the year, beef cows required little attention and the enterprise seldom interfered with crop work. It often was arranged so that the herd watered near the farmstead. Under these conditions, a few minutes a day was suffi-

TABLE 2. GRAZING YIELDS OBTAINED WITH BEEF CATTLE ON BLACKLAND AND GRAND PRAIRIE FARMS, 1952-54

Item		Blackland farms	Grand Prairie farms
Farms studied	(no.)	18	22
Permanent pastures			
Acres per farm	(av.)	35	173
Days of grazing per acre:			
When used with beef cows		45	32
When used with stocker cattle		71	50
Sudangrass			
Acres per farm	(av.)	5	11
Days of grazing per acre:			
When used with beef cows		91	82
When used with stocker cattle		146	131
Oats-clover grazed prior to about March 1			
Acres per farm	(av.) <sup>1</sup>	55	67
Days of grazing per acre:			
When used with beef cows		23	18
When used with stocker cattle		45	36
Oats-clover utilized entirely for grazing			
Farms studied	(av. no.)	12	9
Acres per farm	(av.)	8	16
Days of grazing per acre:			
When used with beef cows		89	76
When used with stocker cattle		148	132

<sup>1</sup>Includes a small acreage of wheat and barley.

cient for the attention needed. Supplemental feeding was done during the winter when crop work was slack. Throughout the year, Blackland farmers averaged about 35 minutes per day looking after the beef enterprise. With larger herds, Grand Prairie farmers averaged about 50 minutes daily caring for beef cattle.

Calves fat at weaning usually were sold, but thin calves often were kept for more growth and finish. Three Blackland and four Grand Prairie farmers made a practice of creep feeding calves before weaning. Creep-fed calves were in good condition when weaned. Otherwise, there usually were some calves on each farm not carrying enough finish at weaning time to meet butcher demands. Often such calves were too heavy to be most in demand as stockers. The number of calves lacking finish when weaned greatly increased during drouth years. In most cases, thin calves were carried over the winter and sold later.

Most of the calves that had access to a creep were fed a relatively long time. Oats made up about 50 percent of the ration (Table 4). When oats were fed alone, no cottonseed meal was used. Ground corn usually was supplemented with cottonseed meal.

Five farmers put all of their calves in the feedlot to fatten on homegrown feeds. The calves usually were started on feed before weaning in order to reduce shrinkage. The length of time calves were in the feedlot varied since the fattest calves were topped out as soon as they had the desired finish. A summary of the drylot feeds used is shown in the last two columns of Table 4.

Cooperating farmers usually marketed cattle at local livestock auctions and seldom knew the market grade of the animals sold. However, a large proportion of the calves going into the feedlot on these five farms sold at about the same price as was being paid for animals grading Good and for those grading Choice on markets where livestock grading was practiced.

#### PRODUCTION AND SALES

A summary of beef production and sales from the cow-calf enterprise is shown in Table 5. Production figures are for the 3 years, 1952-54. However, prices on which sales are based are at the level which prevailed during the last part of 1953 and the first part of 1954 to facilitate a comparison with other types of beef cattle enterprises which will be discussed later.

About half of the calves (above those kept for replacements) which were not fed, either through a creep or in a drylot, were sold at weaning time. The selling weight of these calves averaged 423 and 399 pounds, respectively, on Blackland and on Grand Prairie farms. Some calves went for slaughter. The remainder of the calf crop usually was sold the following spring or early summer, averaging 570 to 600 pounds. Yearlings handled in this way usually brought from 0.5 to 1 cent per pound more than did calves from the same herds that were sold in the fall.

Creep-fed calves usually were sold when weighing 500 pounds or more. Complete records were not kept, but available records indicated that creep-fed calves were sold at a younger age than

TABLE 3. SUMMARY OF FEED AND LABOR REQUIREMENTS FOR BEEF COWS ON CENTRAL TEXAS FARMS, 1952-54

Item	Average requirements per cow on:					
	Blackland farms			Grand Prairie farms		
Farms studied	(no.)	15		21		
Cropland per farm	(ac.)	184		201		
Permanent pasture per farm	(ac.)	36		181		
Beef cows per farm, av.	(no.)	12		22		
Labor per cow annually	(hrs.)	18		14		
Feed fed annually per cow:	Total pounds	Feed purchased Pounds	Dol.	Total pounds	Feed purchased Pounds	Dol.
Concentrates:						
Ground ear corn	120	—	—	60	—	—
Cottonseed meal	100	100	3.40	135	135	4.59
Breeder cubes	13	13	.60	50	50	2.40
Miscellaneous concentrates	13	6	.18	5	5	.15
Salt and minerals	24	24	.89	22	22	.78
Total per cow	270	143	5.07	272	212	7.92
Forages:						
Carbonaceous hay	2,181	200	3.00	1,338	120	1.80
Cottonseed hulls	51	51	.67	17	17	.22
Clover hay	100	—	—	88	—	—
Alfalfa hay	96	96	1.92	28	28	.56
Total per cow	2,428	347	5.59	1,471	165	2.58
Grazing per cow:		Days of grazing		Days of grazing		
Permanent pasture		84		228		
Oats or oats-clover		72		37		
Sudangrass		31		15		
Field residue		65		42		
Total grazing days		252		322		

TABLE 4. SUMMARY OF FEEDING PRACTICES USED IN CREEP AND DRYLOT FEEDING OF FARM-RAISED CALVES, 1952-54

Item		Creep feeding				Drylot feeding			
		Blackland farms		Grand Prairie farms		Blackland farms		Grand Prairie farms	
Farms studied	(no.)	3		4		3		2	
Calves fed per farm	(no.)	11		17		10		23	
Feed fed per calf:		Lb.	Cost feed purchased	Lb.	Cost feed purchased	Lb.	Cost feed purchased	Lb.	Cost feed purchased
Concentrates:									
Oats		200		220		—		70	
Ground ear corn		160		185		1,600		1,200	
Ground sorghum grain		—		—		—		830	
Cottonseed meal		30	\$1.02	40	\$1.36	250	\$8.50	300	\$10.20
Total		390	\$1.02	445	\$1.36	1,850	\$8.50	2,400	\$10.20
Forages:									
Oats-clover hay		—		—		—		435	
Sorghum hay		—		—		540		435	
Total forage		—		—		540		870	

were the calves sold off the cows without supplemental feeding. Of these two groups, creep-fed calves sold at about 4 cents more per pound.

Most of the calves weaned and put in the feedlot were marketed during the winter and spring. When sold, lot-fed calves weighed between 650 and 700 pounds. During this study, there was a relatively strong demand at this time of year for feedlot calves of this weight.

Cow and bull sales represent a normal turnover for breeding herds of the size studied. Culled cows were either old, had failed to raise a calf or were not of desired quality. Most culled cows were in fair to good flesh when sold.

Young bulls, usually registered, were purchased weighing 700 to 800 pounds and old enough for service. Normally, a bull was used 3 or 4 years and sold, weighing 1,100 to 1,200 pounds. In some cases, farmers exchanged bulls with a neighbor after 2 years service.

#### PRODUCTION COSTS

A summary of the cost of input items used with beef cows is shown in Table 4. These include cash costs, the value of homegrown feeds and overhead costs directly associated with the cattle enterprise.

Items of feed include both the concentrates and forage used to maintain the breeding herd

TABLE 5. SUMMARY OF PRODUCTION, SALES AND COSTS FOR BEEF COW HERDS ON CENTRAL TEXAS FARMS

Item		Supplemental feeding of calves					
		Blackland farms			Grand Prairie farms		
		No feeding	Creep feeding	Drylot feeding	No feeding	Creep feeding	Drylot feeding
Farms studied	(no.)	9	3	3	15	4	2
Beef cows per farm	(no.)	12	13	11	22	20	26
Calves raised annually per farm	(no.)	11.5	12.5	11	21	19	25
Calves sold annually per farm	(no.)	5	11	10	9	17	23
Wt. calves sold, av.	(lb.)	423	515	672	399	503	685
Total wt. calves sold	(lb.)	2,115	5,665	6,720	3,590	8,550	15,755
Value	(dol.)	331.84	1,127.34	1,142.92	561.12	1,692.90	3,387.32
Yearlings sold, av.	(no.)	5			9		
Wt. yearlings sold, av.	(lb.)	570			597		
Total wt. yearlings sold	(lb.)	2,820			5,375		
Value	(dol.)	454.87			878.81		
Wt. cull cows and bulls sold	(lb.)	1,370	1,480	1,210	2,410	2,000	2,090
Value	(dol.)	143.49	154.00	127.38	249.72	210.10	219.76
Total live wt. sold	(lb.)	6,305	7,145	7,930	11,375	10,550	17,845
Total cattle sales	(dol.)	930.20	1,281.34	1,545.30	1,689.65	1,903.00	3,607.08
Cost items, cow-calf enterprise							
Feed annually per farm					Dollars		
Purchased concentrates		66.00	81.00	122.00	182.00	189.00	389.00
Homegrown concentrates		34.00	117.00	331.00	28.00	215.00	852.00
Purchased forages		73.00	58.00	17.00	59.00	54.00	21.00
Homegrown forages		219.00	236.00	320.00	244.00	223.00	449.00
Crops used entirely for grazing		98.00	126.00	127.00	304.00	233.00	201.00
Vaccine and veterinary expenses		12.00	13.00	13.00	18.00	17.00	23.00
Marketing expense		27.00	20.00	30.00	46.00	45.00	52.00
Interest-added investment		93.00	102.00	102.00	155.00	138.00	228.00
Miscellaneous expenses		90.00	85.00	91.00	133.00	126.00	172.00
Total costs		712.00	838.00	1,153.00	1,169.00	1,240.00	2,387.00
Returns above costs, total		218.20	443.34	392.30	520.65	663.00	1,220.08
Per cow in herd		18.18	34.10	35.66	23.67	33.15	46.92

(Table 3) and that used by the calves on farms where creep and drylot feeding (Table 4) were practiced. Feed expense included grinding. Only purchased feeds and custom grinding represented a cash expense.

Certain lands were devoted to beef cattle which could have been used for some other purpose to produce income. For instance, the acreage of Sudangrass could have been in a cash grain or feed crop. Without the cattle enterprise, grain could have been harvested from the oats that some farmers utilized entirely for grazing, and the permanent grassland used by cattle could have been leased to other farmers.

As figured for Tables 5 and 6, the item "cost of crops used entirely for grazing" includes a rental charge for cropland used and for permanent pasture at \$6 and \$1 per acre, respectively. Prices current at the time of the study were used to estimate costs for seed and other materials used in growing such crops. Also included was a charge for the labor and power required with each

crop. A large proportion of these costs were not cash costs.

Farmers usually vaccinated calves for black-leg and kept medicine for screwworms. Veterinary services were used sparingly, with some farmers reporting no expense for this purpose.

Marketing expenses included the selling commission and hauling expense. In some instances, cattle were sold at the farm with no selling costs.

Interest was charged on the investment in cattle, in feed for cattle and in facilities (such as electric fence or earth tanks) which were added to care for the cattle enterprise.

Included among miscellaneous costs were repairs and depreciation of improvements and other facilities added especially for the cattle enterprise. Bull replacement also was included.

#### RETURNS ABOVE COSTS FOR COW HERDS

At prices prevailing at the time of the study, even a small beef cow herd was profitable. Cattle

TABLE 6. SUMMARY OF CATTLE WEIGHTS, CATTLE SALES, FEED REQUIREMENTS AND PRODUCTION COSTS FOR STEER ENTERPRISES ON INDIVIDUAL CENTRAL TEXAS FARMS

Item	Stocker cattle utilizing grazing for a relatively			Feeder cattle fed in drylot
	Short period	Intermediate period	Long period	
Farm studied	A	B	C	D
Cropland per farm (ac.)	202	190	206	250
Permanent pasture per farm (ac.)	20	48	104	25
Steers purchased, date	1/2/54	10/1/53	9/15-25/53	9/21/53
Number purchased	42	30	48	33
Average weight (lb.)	330	381	312	450
Steers sold, date	4/5/54	4/4/54	8/1-10/54	1/20/54
Number sold	41	30	46	33
Average weight (lb.)	451	578	725	690
Total weight sold (lb.)	18,810	17,335	33,350	22,770
Gross cattle sales (dol.)	2,934.00	2,807.00	5,507.00	4,896.00
Labor with steers, total (hrs.)	90	120	293	260
Per steer (hrs.)	2.1	4.0	6.1	7.8
Feed used per steer:	Lb.	Lb.	Lb.	Lb.
Ground ear corn	38	40	—	680
Ground grain sorghum	—	—	—	600
Threshed oats	11	—	—	—
Cottonseed meal	—	8	—	170
Minerals	3	3	10	9
Hay	85	60	410	580
Pasture, grazing per steer:	—	—	Days	—
Field (crop residue)	—	41	—	65
Permanent, fall and winter	—	40	—	52
Oats or oats-clover	74	39	—	90
Permanent, spring and summer	16	35	—	56
Sudangrass	—	—	—	61
Total	90	155	324	—
Cost items, steer enterprise:	—	—	Dollars	—
Steers purchased	1,880.00	1,630.00	2,245.00	2,524.00
Feed fed per farm:	—	—	—	—
Purchased concentrates	2.00	31.00	6.00	183.00
Homegrown concentrates	45.00	24.00	—	893.00
Homegrown hays	36.00	18.00	198.00	192.00
Crops used entirely for grazing	20.00	48.00	471.00	—
Vaccine and veterinary	5.00	12.00	25.00	7.00
Marketing expense	83.00	75.00	134.00	60.00
Interest on added investment	41.00	52.00	135.00	84.00
Miscellaneous expense	51.00	51.00	83.00	132.00
Total	2,163.00	1,941.00	3,297.00	4,075.00
Returns above costs, total	771.00	866.00	2,210.00	821.00
Per steer purchased	18.37	28.85	46.04	24.86



utilized the grazing available from small grain and crop residues, in addition to providing a market for farm-grown feeds.

The beef cow enterprise increased farm earnings for each group of farms by \$200 to \$1,200 per farm. The utilization of farm labor was improved when beef cattle were added since most of the cattle work came during the slack period for other farm work. This was particularly true when calves were fed in drylot.

It was profitable for farmers to practice creep feeding or to feed calves in a drylot after weaning. Although both cash and noncash expenses were increased, larger sales volume and higher sale prices gave considerable advantage to marketing calves carrying a good finish.

At 1953 prices, 12-cow Blackland herds where calves were marketed without additional feeding paid the operator \$1 per hour for labor in addition to paying all costs, including 5 percent interest on the added investment required by the beef enterprise. Larger Grand Prairie herds (averaging 22 cows) handled similarly, paid all costs and paid the operator \$1 per hour for labor plus 12 percent on the added investment.

Small Blackland herds, where calves were fed through a creep or in a drylot, returned approximately 15 percent on the added investment for the beef enterprise in addition to paying all costs and a \$1 per hour labor charge. Returns on the additional investment on Grand Prairie farms where calves were creep-fed or were lot-fed averaged 19 and 24 percent, respectively.

#### STOCKER AND FEEDER CALF ENTERPRISE

A few farmers ran some steers during part of the year in addition to keeping a herd of cows. Steers usually were kept separate from the cows and were handled as a separate enterprise. Farms where cattle are operated in this way usually are above average in size.

Many Central Texas farmers prefer steers rather than cows because of the flexibility of the steer enterprise. The number of stockers purchased can be governed by feed supplies, and the

number kept usually can be adjusted readily to changing conditions with a minimum danger of loss. Farmers whose main interest is in cash crops prefer to spend very little time with livestock except when crop work is not urgent. For this reason, they prefer stocker cattle which can be kept for any desired length of time.

Most Blackland farmers prefer to purchase lightweight calves through local livestock auctions.

Some stockers were bought entirely to utilize grazing, others to utilize grazing prior to going into the feedlot and some feeders were purchased to go directly into the feedlot.

Although stocker and feeder calves are fitted into cash crop farming in numerous ways, four systems were the most common on Blackland farms. Lightweight calves were purchased to: (1) graze small grains during the winter and early spring; (2) graze crop aftermath and native pastures in the fall, graze small grains in the winter and utilize the spring flush of grazing from permanent grassland; (3) utilize grazing most of the year; and (4) feed out in a drylot.

Because of drouth and short feed supplies, relatively few cooperating farmers bought stocker or feeder cattle during 1952. Improved grazing prospects late in 1953 encouraged fall and winter buying of stocker cattle. Because of variations in practices followed in the period during which stockers were kept and in the kinds of grazing utilized, the data obtained were not well suited to group analysis. Consequently, case studies were made of the four most common systems by which stocker and feeder cattle were fitted into the farming program on Central Texas farms. These are designated as farms A, B, C and D.

Improvements made on most Central Texas farms to accommodate a steer grazing enterprise consisted of additional water facilities, about a half-mile of electric fencing and some remodeling of lots.

For lot feeding, there usually was remodeling of sheds or barns and the addition of new feed troughs.



Figure 2. Good quality calves being wintered in Bell county. These calves utilized field grazing and small grain pasture that otherwise would have been lost.

Summaries of feed requirements, production, sales and production costs for four systems where steers were purchased to utilize grazing and farm-grown feeds are shown in Table 6.

#### STEERS KEPT FOR A SHORT GRAZING PERIOD

When moisture conditions are favorable for early seeding and growth, grain fields may be ready to turn on in November. More often it is December or January before grazing is plentiful. Livestock are taken off of grain that is to be harvested about March 1. The amount of grazing and the length of the grazing period are affected largely by moisture and temperature. These conditions vary from year to year. With favorable conditions, grazing will be abundant over a relatively long period, but with unfavorable conditions, relatively little grazing may be produced.

Farmer A had only a small acreage of permanent grassland (Table 6, Column 1) and had not maintained a year-round beef enterprise. However, a substantial acreage of small grains, mostly oats, was seeded each year, and stocker calves were purchased as needed to utilize the available grazing.

To handle the cattle enterprise, farmer A had remodeled his lots and a shed previously used for work stock, put in an earth tank and purchased material for a half-mile of electric fence.

He bought 42 calves averaging 330 pounds in January 1954 for approximately \$13.50 per hundredweight. These were late calves, thin and lighter in weight than usually are purchased at that time. The calves were put on good oats grazing and, except during wet weather, remained on small grain pasture until March 2. The remainder of the grazing period was about equally divided between a small block of volunteer oats that was not kept for grain harvest and the spring growth of permanent pasture.

The calves were fed 56 bales of hay, 1,600 pounds of ground ear corn and 15 bushels of oats.

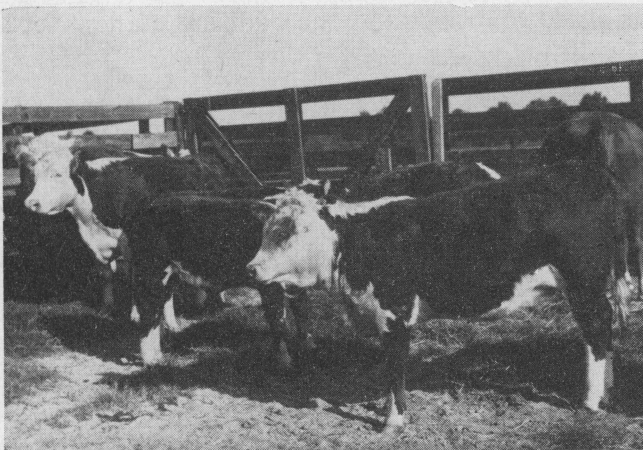


Figure 3. Beef cows on the farms studied were good quality grade animals. Registered bulls were used almost entirely.

The corn and oats were fed during bad weather as was most of the hay.

One calf died. The remaining 41 head, averaging 451 pounds, brought \$15.60 per hundredweight. The calves gained approximately 1.3 pounds per head daily for the 3-month grazing period. A total of 4,950 pounds of liveweight was produced.

Cost items for the steer enterprises were figured by the same method as previously described in connection with beef cow herds.

After allowing for both cash and noncash cost items for livestock, materials and facilities used with the beef grazing enterprise, farmer A added \$770 to the farm earnings. This was a little more than \$18 per calf grazed, or approximately the same as the returns per cow on similar Blackland farms (Table 5) where calves were sold without supplemental feeding. The larger number of steers grazed on farm A gave total returns considerably larger than the average realized from 12 cows.

The investment on farm A was increased a little more than \$2,000 because of the cattle enterprise. The largest part was for cattle and was for only 3 months. At 1953-54 prices, the cattle enterprise on farm A paid for all costs associated with it, plus 35 percent interest on the \$2,000 increase in investment.

In this instance, there was a little more than 2 cents per pound increase between the buying and selling price of the cattle. Sometimes cattle kept for a short grazing period will not sell for any more than the purchase price. Had farmer A sold his steers for \$13.50 per hundredweight, he still would have made a profit of \$376, or nearly 19 percent on the additional money invested in the steer grazing enterprise.

#### STEERS KEPT FOR AN INTERMEDIATE GRAZING PERIOD

Farmer B had 48 acres of permanent grassland and a sizable acreage of small grain to use with a stocker cattle enterprise. No cultivated crops were grown specifically for pasture.

He bought 30 calves in 1953 soon after the main part of the cotton was harvested. The calves weighed 381 pounds and cost \$14 per hundredweight, plus \$30 for hauling.

The calves were run on sorghum and corn stalks and on dry permanent pasture until December 20. Oats were grazed from December 20 to March 1. The calves were then shifted to the spring growth of permanent pasture until April 4, when they were marketed.

Throughout the grazing period, the calves had access to a straw stack. During bad weather, they were fed 1,200 pounds of ground ear corn and 250 pounds of cottonseed meal.

Thirty calves gained nearly 1.3 pounds per head daily and weighed 578 pounds when sold. Some variation occurred in the selling price, but

the lot averaged approximately \$15.10 per hundredweight.

In this instance, steers were carried a little more than 5 months and gained nearly 200 pounds per head, almost entirely from grazing. A total of 5,900 pounds of liveweight was produced. This was nearly as much liveweight as was marketed annually from 12 cows on Blackland farms where the calves were sold without being fed grain.

With the longer grazing period, 30 steers gave somewhat higher returns than did 42 steers kept for 90 days, or the short grazing period just previously discussed. Stated differently, it took 50 percent more steers as handled on farm A to give similar returns above costs compared with those obtained with the steer grazing enterprise on farm B.

Including the cost of the cattle, farmer B had an additional investment of nearly \$1,900 because of the steer grazing. At 1953-54 prices, he earned over 40 percent return on this investment after all costs associated with the grazing enterprise, including a labor charge, were deducted from cattle sales.

Had farmer B sold these steers for only \$14 per hundredweight (the price he paid), the steer grazing enterprise would have returned a profit of \$486, or \$16 per head grazed.

#### STEERS KEPT FOR A LONG GRAZING PERIOD

Farmer C normally bought steer calves in the early fall and pastured them until grazing gave out the following summer. The farm included about 100 acres of permanent grassland. Eighty to 100 acres of small grain, largely oats seeded in combination with clover, were planted each fall. When needed, some oats were used entirely for grazing. Twenty or more acres of Sudangrass were planted yearly for summer grazing.

During the latter part of September 1953, farmer C bought 48 steer calves. The calves were unusually light, averaging only 312 pounds, and were purchased over a 10-day period through

local livestock auctions at prices averaging approximately \$15 per hundredweight.

The calves were first turned in on sorghum stalks. Later the cotton field was opened up and, with volunteer oats and native pasture, was grazed until January 1. During much of this time, 3 bales of hay were fed daily. Two calves died prior to January 1.

Oats and some wheat furnished grazing until April 10. Fifteen acres of oats were fenced off and used entirely for grazing during the last 40 days.

Permanent grassland was then pastured until early in June when Sudangrass was ready. Sudangrass furnished most of the grazing until the steers were sold in August. After a grazing period of nearly 11 months, the 46 steers weighed 725 pounds and had gained more than a pound per day. They were sold over a 10-day period and averaged a little more than \$16.50 per hundredweight.

From the standpoint of cattle numbers, the steer enterprise on farm C was the largest of the stocker and feeder cattle programs herein described. It also was the most profitable in total returns above costs and in returns per animal.

In 1953-54, farmer C produced and sold over 18,000 pounds of steer gain. This compares with cattle sales averaging 11,375 pounds for 15 Grand Prairie farms where 22 cows were maintained and calves were sold without grain feeding (Table 4).

In preparation for grazing steers, farmer C added a large dirt tank, rebuilt barbed wire fencing, added electric fence and enlarged the corrals. The cost of these new improvements added about \$800 to the farm investment. The cost of the cattle ran the added investment to nearly \$3,000.

In 1953-54, the steer grazing enterprise on farm C returned approximately \$1,900 after all expenses plus a charge for labor were deducted.

The steers on farm C were sold for 1.5 cents more per pound than the price paid. Had the



Figure 4. Blackland farmers get good summer gains when steers are pastured on Sudangrass.

selling price per pound been the same as the purchase price, the cattle enterprise would have shown a profit of \$37 per head grazed.

#### STEERS FED IN DRYLOT

Farmer D used steers as a market for grain and hay rather than to utilize grazing. However, he did not market all of his grain in this way. Consequently, when the outlook was favorable, grain supplies usually were sufficient for cattle feeding, even though current crop yields were below average.

He remodeled a shed, enlarged his lots and added water facilities and feed troughs to provide for cattle feeding. The total cost of these improvements amounted to about \$750.

In late September 1953, farmer D bought 33 good quality calves for the feedlot. They averaged 450 pounds and cost \$17 per hundredweight.

For the first 20 days, the calves were given a limited amount of ground corn, a pound of cottonseed meal daily and all the hay they would eat. During the next 100 days, hay was limited to about 4 pounds per head daily, cottonseed meal was increased to 1.5 pounds per head daily and they were given as much ground ear corn and ground sorghum grain as they would clean up.

After 120 days on feed, the steers had gained 2 pounds per head daily. They were sold weighing 690 pounds at \$21.50 per hundredweight.

Thirty-three calves handled in this way in 1954 gave about the same returns above feed costs as did the 30 lighter weight calves purchased by farmer B for use in a 5-month grazing program. However, much of the success of the beef enterprise on farm B depended on small grain grazing, whereas the lot feeding program on farm D was entirely independent of grazing.

A number of farmers vary somewhat from the system used by farmer D, in that calves are grazed in stalk fields or on volunteer oats for 30 to 40 days before going into the feedlot.



Figure 5. These 380-pound calves were purchased in the fall and given 30 days field grazing followed by feeding in a drylot.

Including the purchase price of the cattle farmer D increased his farm investment by approximately \$3,500. After all costs associated with the drylot feeding enterprise were deducted from sales, the remainder amounted to a 16 percent return on the \$3,500 added investment, plus \$1 per hour for the labor used with cattle.

Fat calves, lot-fed as were those on farm D, usually sell for more per pound than feeder calves. However, the amount of this price spread varies greatly from year to year or from time to time during a particular year. Farmer D got a price margin of 4.5 cents per pound. Had this margin been only half this amount, returns above costs would have dropped to \$308, or \$9.33 per calf fed.

#### MANAGEMENT PRACTICES THAT INFLUENCED RETURNS

The combination of higher operating costs and lower beef prices gives added importance to management practices that cut costs, reduce risks, increase output, improve quality and raise the sale value of cattle. A brief discussion of some of the practices which were observed to influence returns from beef cattle follows:

1. Sound planning was important. On the most successful farms, the land-use program and the beef cattle project were planned to supplement each other. Here beef cattle, in addition to utilizing permanent grassland, made use of grazing from small grains and crop residues which had no use other than for grazing. Crop enterprises interfered very little with beef cattle and vice versa. The successful operator gave them the necessary attention, even during the busy part of the crop season.

2. Water facilities in the area studied frequently are limited. The farms studied had, at one time, been operated with workstock and had sufficient stock water for that need. Additional water facilities usually were provided to care for cattle needs. Serious difficulties were not experienced during the study by cooperating farmers because of lack of water. Numerous instances were observed of other farmers suffering financial loss because of having to sell animals at an unfavorable time when water supplies ran out. Earth tanks are not always a dependable water source in either the Blackland or the Grand Prairie.

No farmer should attempt to add cattle without plenty of water for their needs.

3. Adequate feed supplies are almost as important as adequate water. The Blackland farms studied averaged 3 acres of permanent pasture per cow. Here a great deal of dependence was put on small grains for winter grazing and on field aftermath and Sudangrass at other times. Considerable hay was fed during the winter.

Grand Prairie farmers stocked at the rate of 1 cow for 8 acres of permanent grassland. Permanent pastures were expected to furnish grazing

about three-fourths of the year. Small grain and field grazing were other important pasture sources.

Reserve hay supplies were sufficient during bad weather or when grazing did not develop as expected. Farmers with the lowest cost used grazing most of the year.

Some of the cooperating farmers found their feed reserves insufficient for a prolonged period without grazing, such as occurred on many farms during the winter of 1951-52.

That year, seven farmers with pasture fed only 500 pounds of hay per cow, all of which was homegrown. Others without pasture fed an average of 3,300 pounds per cow. Farmers with no grazing, but with ample hay reserves, wintered cows at a cost of \$20 per head less than did farmers who started the winter with a hay reserve of only 1,000 pounds per cow.

A reserve of 1.75 to 2 tons of dry forage is needed per cow for winters when there is little or no grazing available.

As operated on Central Texas farms, a steer herd was more flexible than a cow herd and was relatively easy to adjust to variations in feed supplies.

4. A few farmers got very good results from feeding silage. In all cases observed, cow herds to which silage was fed were larger than those discussed in this bulletin. Some economical gains were reported from silage fed to stocker cattle.

5. Some advantages were observed in favor of larger herds. For instance, one bull was needed on all farms, whether the herd consisted of 10 or 30 cows. In each case, the total cost was approximately the same, but the cost of keeping a bull was much lower per cow with the larger herds. Also, it took more than half as much time to feed and care for 12 cows as it did for 24.

The investment per cow in improvements such as fence, shelter and water facilities usually decreased as the size of herd increased.

6. Death losses among cows averaged 2 to 3 percent. Daily, or almost daily, attention helped keep losses low. That herds were generally in good health was reflected in a 95 percent calf crop. Veterinary expenses averaged only about \$1 per cow for breeding animals, including the cost of vaccinating calves for blackleg. Veterinary expenses were somewhat less for stocker and feeder calves.

7. Sheds and barns used on most farms were functional but inexpensive. When needed, pole-type buildings provided relatively inexpensive storage for hay and shelter for animals. In all but a few cases studied, overhead expenses were relatively low. Although the mainline fences were barbed wire, most of the cross fencing used in grazing small grain or other field crops was elec-

tric. This practice helped greatly in keeping down investment and overhead costs.

8. It was important that cattle be "well sold" and that stocker and feeder cattle be "well bought." Most animals were bought at relatively light weights, a popular practice among many experienced feeders. Purchases usually were made in September, October, November or December when prices generally are at or near the year's low.

A high proportion of the calves fed for slaughter were marketed during the late winter and spring when there was a strong local demand for butcher cattle.

9. On the farms studied, calves usually were not kept on feed after they would grade Good or Low Choice. This quality of young beef was in demand at the markets where most animals were sold.

10. Many farmers let the bull run with the cows all year. This practice is the easiest to manage. As a result, the calving season often is scattered over several months if not the entire year. The farmer should watch for calving trouble at all times and especially for screwworm infestation.

Spring calves were sold off cows in the fall or were weaned and put on feed. Calves that came late in the spring or summer were too young and too light to bring much when marketed in the fall. Such calves often were held over the winter.

An alternative plan which is gaining popularity is the practice of fall calving. A calf eats little grass before it is 3 months old. An April 1 calf is ready to eat grass about July when grass growth is checked because of hot, dry weather. Calves coming in October, November and even December will be eating grass by or before March 1, and will be able to consume considerable grazing during the lush season. Fall calves are fat and ready for market by or before June and at a time when prices for butcher calves usually are relatively high.

Wintering is more of a problem with cows suckling small calves than with cows due to calve in the spring. Fall calving should not be undertaken without a good supply of forage, either grazing or hay.

11. There was no opportunity in this study to evaluate farmer results from the use of bulls that are known to be high-gaining animals. Other research has shown that the use of high-gaining sires and the selection of high-gaining heifers for replacements will greatly increase calf weights at weaning time and gain in the feedlot (see TAES Bulletin 809). As a rule, these practices are not followed systematically with small farm herds such as were included in this study. However, the results that can be obtained justify wide adoption of this method of herd improvement.

[Blank Page in Original Bulletin]

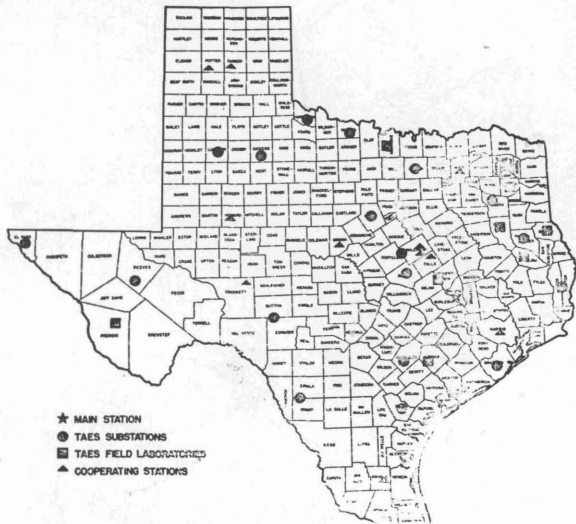
### ACKNOWLEDGMENTS

The author acknowledges the assistance of H. O. Hill, superintendent of Substation No. 23 at McGregor, who helped in the initial planning of the study and has given many helpful suggestions.

Appreciation also is expressed to the county agents who were helpful in planning and getting the study under way.

Margaret Machos and Mary Edna McDonald, members of the clerical staff, rendered valuable assistance in the tabulation of the data and in the preparation of the manuscript.

This study was made possible by the cooperation of the farmers who furnished the information here reported and analyzed.



Location of field research units in Texas maintained by the Texas Agricultural Experiment Station and cooperating agencies

## State-wide Research

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

**I**N THE MAIN STATION, with headquarters at College Station, are 16 subject-matter departments, 2 service departments, 3 regulatory services and the administrative staff. Located out in the major agricultural areas of Texas are 21 substations and 9 field laboratories. In addition, there are 14 cooperating stations 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.

**R**ESearch BY THE TEXAS STATION is organized by programs and projects. A program of research represents a coordinated effort to solve the many problems relating to a common objective or situation. A research project represents the procedures for attacking a specific problem within a program.

**T**HE TEXAS STATION is conducting about 350 active research projects, grouped in 25 programs which include all phases of agriculture in Texas. Among these are: conservation and improvement of soils; conservation and use of water in agriculture; grasses and legumes for pastures, ranges, hay, conservation and improvement of soils; grain crops; cotton and other fiber crops; vegetable crops; citrus and other subtropical fruits, fruits and nuts; oil seed crops—other than cotton; ornamental plants—including turf; brush and weeds; insects; plant diseases; beef cattle; dairy cattle; sheep and goats; swine; chickens and turkeys; animal diseases and parasites fish and game on farms and ranches; farm and ranch engineering; farm and ranch business; marketing agricultural products; rural home economics; and rural agricultural economics. Two additional programs are maintenance and upkeep, and central services.

**R**ESearch RESULTS are carried to Texas farm and ranch owners and homemakers by specialists and county agents of the Texas Agricultural Extension Service.