

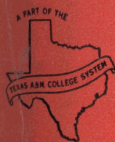
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*An Analysis of
Full-time Commercial Farms
in Northeast Texas*

THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXPERIMENT STATION

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Summary

Opportunities are available to raise incomes from full-time commercial farming operations in Northeast Texas, especially on farms where livestock enterprises are predominant. Many of the dominantly crop farms could be reorganized into livestock type farms.

Land resources (cropland and pastureland) are not being fully utilized. Output of forage crops (pasture, hay and silage) is responsive to soil treatments, such as tillage, fertilization and crop variety improvement. Rainfall is usually sufficient, if utilized properly in combination with other inputs, to bring about a more productive basis for livestock production.

Management is probably the most significant obstacle to increased incomes on many of the full-time commercial farms, although factors beyond the operators' control prohibit substantial increases in incomes. Many factors, such as lack of land, livestock, equipment and other capital which limit production on many farms, are directly related to management. Efficient management tends to diminish the extent of other restrictions on productivity.

A fifth to a fourth of the cropland on the farms studied was idle. Fifty to 80 percent of the pastureland was frequently unimproved; it was not well "cleared," was covered with poor quality grass and the soil fertility level was generally low. Productivity can be increased without heavy expenditures in most cases.

This and other studies show that both crop and livestock production rates are significantly low; they are considerably lower than the State average. To a certain degree, production rates can be increased through improved management and very little additional expense.

The average full-time commercial livestock-type farm paid a 5.5 percent return on its capital investment and approximately \$2,300 to the operator for his labor and management. The average crop-type farm paid less than 5.5 percent interest on investment and nothing to the operator for his effort.

Generally, livestock farms have certain advantages over crop farms in Northeast Texas. First, livestock enterprises are more efficient users of labor,

since the labor requirements are distributed more evenly over the whole year. Second, livestock production improves soil fertility in the long run without excessive expenditures for this purpose. Third, the maintenance and production of livestock do not depend so critically on the farm where in-place-production conditions become unfavorable to crop production.

The size of business directly affected the level of production and income. The average farm in this study employed one man productively only 59 percent of the time. The average livestock farm had enough employment for only 55 percent of one man's time. These types of farms had incomes considerably higher than other types. With increased size of business, operators engaged in livestock farming can expect considerably higher incomes. This appears especially true for qualified business and technical management.

More than half of the operators interviewed indicated that obtaining control of more acreage was not a significant problem. A series of opinions obtained from them indicate that many of the operators have: (1) a certain resignation regarding their economic alternatives (some with good economic reason); (2) considerable personal liking for farming as "a way of life" with perhaps less than commensurate realization of the economic and managerial requirements necessary to yield a satisfactory livelihood. The relatively low level of education, and the restricted variety and level of occupational experience have had a significant influence on the outlook of the farm operators in this study. In turn, the managerial initiative and operating force of these operators are adversely affected to the extent that the management factor is very critical in highly commercialized farming.

Although there is little question that the level of production resources on the average full-time commercial farm in Northeast Texas is now too low to yield a satisfactory income, there may be some question as to which factor of production is most restrictive on increasing incomes. Information in this study indicates that management may be restrictive.

An Analysis of Full-time Commercial Farms in Northeast Texas

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THIS REPORT CONCERNS INCOMES of full-time commercial farms in Northeast Texas. It is part of a larger study of the area which was initiated in response to a report of the Secretary of Agriculture (1). The geographic areas of Texas and other states where widespread low farm income conditions exist are outlined in Figure 1. These areas are classified into "serious," "substantial" and "moderate" low-income areas. This particular study was confined to the northern half of the Texas area designated as "serious."

The Census of Agriculture shows the average gross cash income per farm from farm production in the study area was less than one-third that of the United States or of Texas. The declining incomes that have occurred became of serious proportions for many full-time commercial farm families during the past two or three decades.

Area

A 24-county area of the low farm income areas designated in the Northeast part of Texas by the Secretary of Agriculture's 1955 Report was surveyed in 1956. This area coincides largely with the East Texas type-of-farming area Number 14 in Figure 2. It is the same as U. S. Census Economic Area XII.

The number of full-time commercial farms in the area declined 31 percent, or proportionately as much as did the number of all farms, between 1954-60, Table 1. The acreage per commercial farm rose 32 percent during the same period, while the value of land and buildings increased 15 percent. Land in full-time commercial farms in the area declined 260,000 acres during 1954-59.

The 24-county study area comprised most of the East Texas Timberlands (pine interspersed with hardwoods), Figure 3. Because of characteristics of the area—rough surface features, small acreages with irregular shaped fields and the attitudes of the people—mechanization and other technological developments have been adopted more slowly than in other areas.

Soils

The soils are sandy and low in organic matter and inherent fertility. They are generally deficient in nitrogen, phosphorus and potassium, and are slightly to strongly acid (2). The land is gently to strongly rolling with some steep slopes which contribute to extensive erosion. Maintenance of soil fertility in the area is difficult and expensive, especially on uneconomic size farms. These factors aggra-

vate severely the low income problem on full-time commercial farms in the area.

Climate

The climate is warm, temperate and humid. Most of the 24 counties receive 40 to 45 inches of rainfall annually, most of which comes during the spring. The average length of the growing season is 230 to 260 days.

Vegetation

The predominant vegetation is timber, mainly pine with hardwoods in some areas. There are small areas throughout Northeast Texas where all kinds of bushes and seedling-type small trees grow. Bermuda and Dallis grasses are the predominant grazing vegetations of economic importance and are well adapted to the area.

Economic Development

The size and relative concentration of the population give certain indications of industrial and non-

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farm business activity. Tyler and Texarkana, in or on the border of the survey area, had populations of 50,000 or more in 1959 (3). Longview and Marshall had populations between 20,000 and 40,000 people. Ten other population centers ranged from 5,000 to 15,000 people; these were located evenly over the survey area. Manufacturing industries added approximately \$218 million to the value of goods produced by industries in the 24-county area (3). Wages amounted to \$272 million while bank deposits were \$458 million.

The limited industrial development which has occurred in the area since World War II brings about economic possibilities for some full-time commercial farm operators. At the same time, farm business reorganization problems are encountered. Some of the problems are institutional, and some are farm managerial weaknesses. The construction of a network of high quality farm-to-market roads in Northeast Texas has made it convenient to move freight to and from the farms in the area. Roads are adequate. Fairly adequate markets have been available in the area; however, as changes are made in the kinds of commodities produced on farms, new problems arise in marketing farm products.

TABLE 1. CHANGES IN SELECTED ASPECTS OF FARMING IN NORTHEAST TEXAS, 1954 TO 1959

Year	All farms	Commercial full-time farms	Average	
			Acreage per farm	Value of land and buildings
	Number	Number	Acres	Dollars
1954	49,026	18,371	150	13,448
1959	33,576	12,603	198	15,504

Source: Census of Agriculture 1954 and 1959.

The Problem

The land of East Texas in early settlement times was "taken up" in relatively small tracts by the settlers. Most of the land was taken by ownership control. Cotton was the primary source of cash income from early times to the 1930's. Under the technology and methods of production during this period, cotton required large amounts of labor. Since the settlers were inclined toward family-type farm operations and ownership control of land, many small-acreage farms were established in East Texas as both a way of life and as a way of livelihood. When oil was discovered

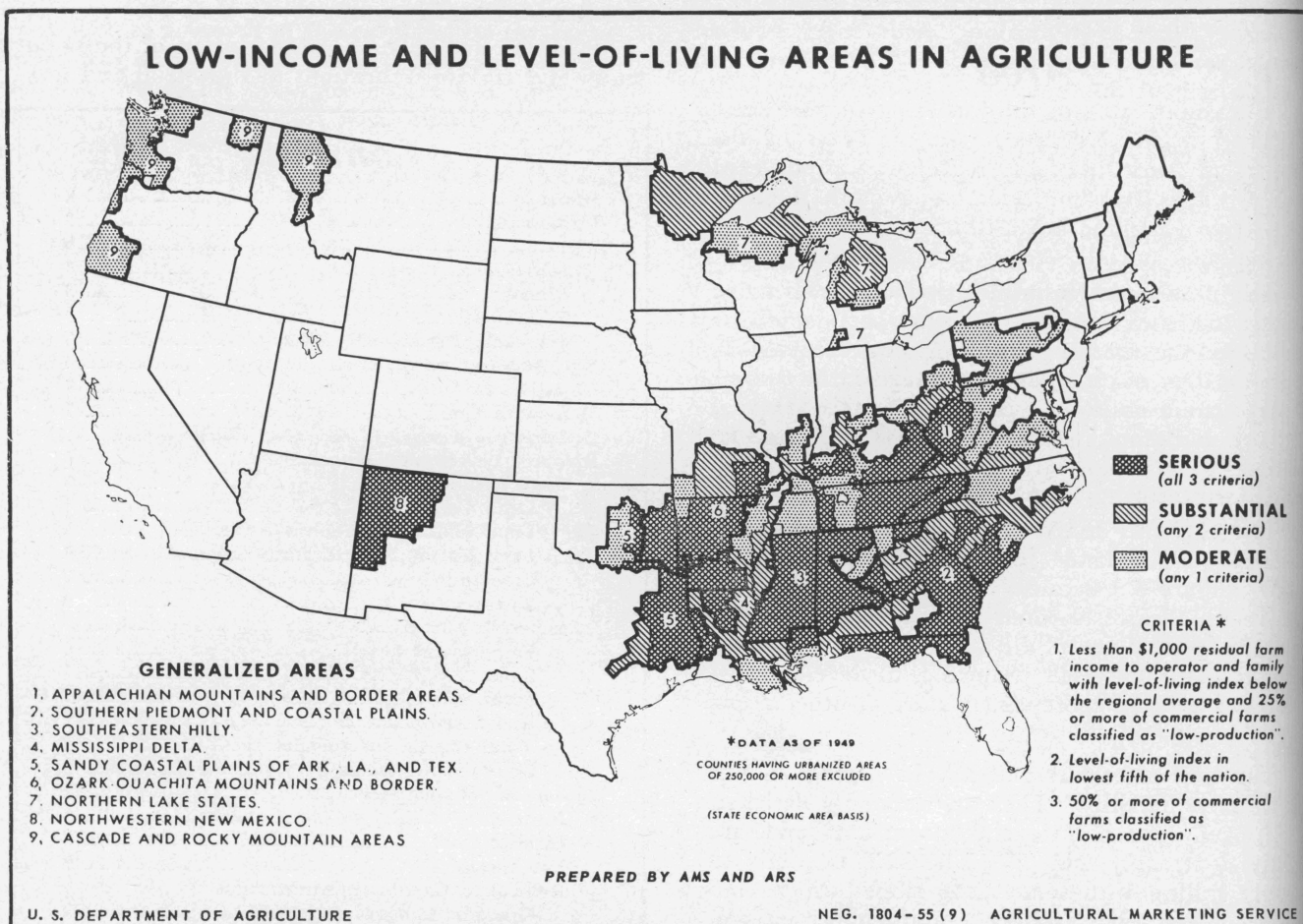


Figure 1. Low-farm-income areas, 1955. Forty-five counties in East Texas were designated as problem areas by the Secretary of Agriculture. Other low-farm-income areas in the United States are also outlined.

in the area, the desire to hold land was reinforced. During and after World War II, many people shifted out of farming into off-farm employment but still held the land. These developments, along with the absence of land leasing experience, have impeded farm-size expansion and enterprise adjustments needed to take advantage of new technology.

Incomes on full-time commercial farms in Northeast Texas were low relative to incomes in other sectors of the economy in this and other areas. They were lower than incomes in other parts of the State. Eighty percent of the full-time commercial farms in the area have net family money incomes below \$3,000. Half of these farms had incomes under \$1,000 per family (4).

Relief of the low income problem on full-time

commercial farms may lie in: (1) operational control of land, (2) adequacy of capital investment and operating credit, (3) development of appropriate managerial skill and (4) development of appropriate markets.

To adjust the type of farming in Northeast Texas to larger units, more capital is needed for land, equipment, livestock and short-term operating expenses. Supplies of capital require loan security in the form of assets or a history of profitable operation under present technology, or both. Neither of these has prevailed in Northeast Texas since World War II. The problem then becomes one of where the adjustment "break-out" is going to occur; size-of-business expansion cannot occur without capital, and capital is not available because loan security is not established.

1. Northern High Plains.
 - a. Wheat, sorghum and livestock.
 - b. Wheat, sorghum, livestock and vegetables.
 - c. Cotton, sorghum and wheat.
2. Canadian Breaks—cattle ranching.
3. Southern High Plains.
 - a. Farming—cotton and grain sorghum.
 - b. Ranching—mainly cattle.
4. Rolling Plains and Prairies.
 - a. Cotton, grain sorghum, wheat and livestock.
 - b. Small grains and livestock.
5. Mountains and Basins—cotton and ranching.
6. Upper Rio Grande Valley—cotton, alfalfa and dairy products.
7. Edwards Plateau and Central Basin.
 - a. Large ranches—cattle, sheep and goats.
 - b. Small ranches—cattle, sheep and goats.
 - c. Central Basin—cattle.
8. South Texas Plain.
 - a. Vegetables and cattle.
 - b. Livestock, peanuts and truck crops.
 - c. Cotton, flax and livestock.
 - d. Livestock and cotton.
9. Lower Rio Grande Valley—cotton, vegetables and citrus.
10. Coastal Bend—cotton, grain sorghum and vegetables.
11. West Cross Timbers—peanuts, dairy products and livestock.
12. Grand Prairie.
 - a. Small grains, cotton, dairy products and livestock.
 - b. Livestock, small grains and cotton.
13. Blackland.
 - a. Cotton and livestock.
 - b. Poultry, dairy products, cattle and cotton.
14. East Texas Farming—livestock, poultry, dairy products and cotton.
15. East Texas Timber—timber products, poultry and livestock.
16. Post Oak—cotton and livestock.
17. Coast Prairie.
 - a. Rice, cattle and dairy products.
 - b. Cotton, rice and cattle.

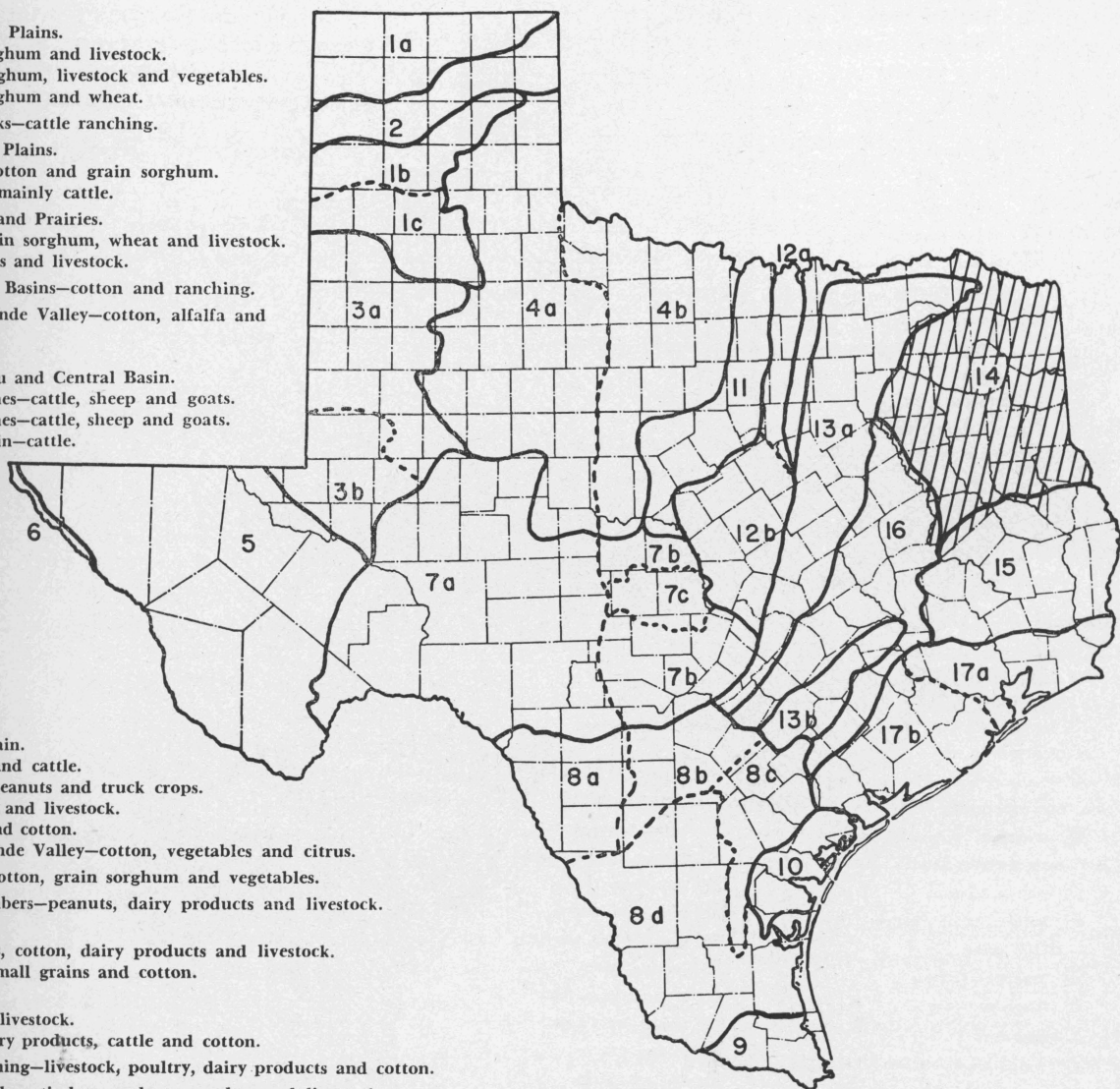


Figure 2. Type-of-farming areas in Texas. Low-farm-income survey area is outlined in crosshatching.

Another factor critical in adjusting successfully from one type of farming to another, as well as from one size level to another, is the managerial skill of the farm operator. Successful modern management must encompass an understanding of a wide range of physical and economic factors influencing farm profits. This management also requires a certain level of training and "seasoning." When the nature of the "bundle" of operational resources changes significantly, the managerial element is often hard-pressed to meet successful operational requirements. In Northeast Texas, management inadequacy is further aggravated by the age and level of education

of the average farm operator. Sixty-one percent of the family heads on full-time commercial farms completed 8 years or less in school (4). Seventy-five percent of family heads were 45 years old or older. Operator managerial outlook and capacity are influenced by these two factors.

When shifts in farming types occur in the area, adjustments in product market facilities must also take place. If establishment of new markets were the only problem, marketing would be of little consequence. But vested interests in markets for farm products of the declining type of farming become a "drag" on potential shifts to new farm enterprises.

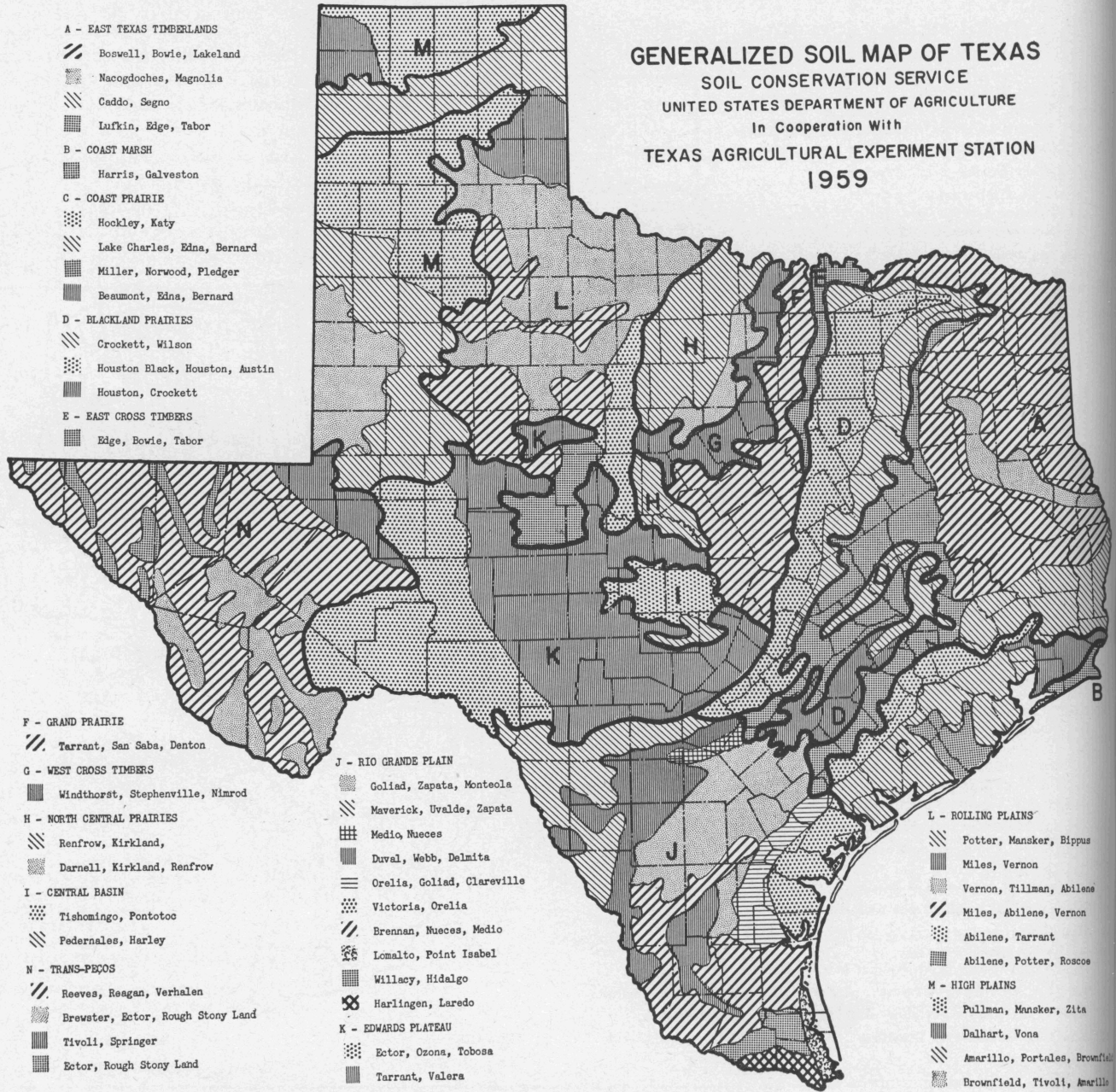


Figure 3. Generalized soil map of Texas. Differences in surface features, related soil types and native vegetation are shown in sub-area divisions in which the soil series are closely related and adapted to similar use.

New markets in an area have to become established in accordance with a whole complex of markets in the entire economy. Any weakness in market management experience among those attempting to establish the needed new market outlets will further aggravate the problem of market outlet development.

Resources on some farms are not utilized; some are limited in availability for several reasons, and many others are in unproductive condition. Land tenure arrangements, market availability and other conditions in the area impose adjustment impediments. Often, the most restricting factor to improvement of income on farms in the study area is management. The adjustment quality of management is affected by operator outlook, training and experience and imagination. Poor managerial qualifications often affect the availability of finances and use of new technology. Comparative advantages for some types of farm business organizations in East Texas are nonexistent.

Objectives of Study

As part of the larger low farm income study, conducted by the Texas Agricultural Experiment Station in cooperation with the Agricultural Research Service of the U. S. Department of Agriculture, the objectives of the study were to:

1. Discover the resource and income situation on full-time commercial farms in Northeast Texas.
2. Identify possible impediments, within the farm itself, to higher incomes.
3. Ascertain the overall nature and extent of the impediments as a basis for possible solution-action programs.

A study of this type is useful for (1) evaluation of resources, (2) discovery of operating conditions, (3) determination of operator capabilities and (4) discovery of farm business potentialities. Agricultural workers and others concerned with improvement problems in the area can use this information in educational work and in making recommendations.

Method of Study

The information for this report was obtained in 1958 by a re-survey of 202 full-time commercial farmers who had been interviewed in 1956 for another phase of this study. They had been selected at random, using an area sampling technique. Of the 202 full-time commercial farmers interviewed in the initial survey in 1956, only half could be contacted in the 1958 re-cavass. The others could not be contacted because of illness, prolonged absence or absence from farming entirely during the intervening 2 years. Thus, only 100 interviews were completed.

The survey information and its analysis focused on developing a descriptive "picture" of these farms

as business units. Specifically, attention was given to characteristics of the farm operator, tenure, land and labor use, capital investment, operating expenses, gross and net farm incomes and value of farm perquisites.

Definition of Terms

In this report, the following definitions of terms are used:

Farm: An agricultural unit with 3 or more acres of land which produced farm products with a value of \$150 or more, and all units with less than 3 acres but having farm sales of \$150 or more.

Full-time Farm: A farm whose operator performs less than 100 days of off-farm labor, which has gross farm sales of \$250 or more and which has family income from nonfarm sources less than the value of farm sales.

Commercial Farm: A farm on which the sales value of farm products amounted to \$1,200 or more, or those with \$250 to \$1,199 and whose operator worked off-farm 100 days or less, or those whose off-farm family income was less than 50 percent of the total income.

Farm Operator: A person who operates a farm, either performing the labor himself or directly supervising it. He may be an owner, or combination owner-tenant or a tenant.

Type-of-farm: A classification based on the enterprise combination and the proportionate income from the different enterprises.

Livestock Farm: A farm where 80 percent or more of the gross farm sales were obtained from the sale of livestock or livestock products, or both.

Livestock-crop Farm: A farm where less than 80 percent, but more than 50 percent, of the gross farm sales were obtained from sale of livestock or livestock products, or both, and the remainder from sale of crops.

Crop-livestock Farm: A farm where less than 80 percent, but more than 50 percent, of the gross farm sales were obtained from sale of crops and the remainder from sale of livestock or livestock products, or both.

Crop Farm: A farm where 80 percent or more of the gross farm sales were obtained from sale of crops.

Productive Man Work Unit (PMWU or Work Unit): The average amount of productive work (direct production of crops, livestock, livestock products and other directly productive enterprises) accomplished by one man with average skills and equipment in 10 hours under average working conditions. Time for repairs and maintenance is not counted as productive work.

Resource Levels and Combinations

The income result of economic effort depends on the amount and quality of resources going into the production effort, as well as on the way the resources are organized and managed.

Land Resources

In Northeast Texas, the contribution of land to the farmer's productive efforts is affected by a number of variables, especially when radical adjustments in land control and use are required to maintain profitable farming.

On the 100 sample farms, a total of 21,087 acres was used in farming operations. There was an average of approximately 211 acres per farm, valued at about \$72 per acre (land only), Table 2.

LAND USE

Approximately 25 percent (52 acres) of the total acreage operated on the average full-time commercial farm studied was in cropland use, while two-thirds (138 acres) was in pastureland, Table 3. One cropland acre in four was idle. One pastureland acre in seven was improved pasture. About half of the woodland was in timber designated as commercial, although the timber could not be described as fully commercial.

LAND CONTROL BY TENURE TYPES

Controlling the use of land for farm production is included under the terms "ownership" and "leasing" or some combination of them. Leasing of land is one way open to partial adjustment of the organization and the size of a farm. In an area like East Texas, where the traditional land-holding pattern has been ownership of relatively small acreages, institutional and other problems affect satisfactory control and economic use of land through leasing. These problems are in addition to other restrictions on profitable farm reorganization, such as credit control and quality management.

Fifty of the 100 farms surveyed operated only the land owned. Five of these "rented out" some land. The average total acreage per farm on the 50 owner-operated farms was 188 acres valued at an average of \$78 per acre, Table 2. Eleven of the farms operated only land "rented in." They had an average of 150 acres valued at \$64 per acre. On the remaining 39 farms, there existed a combination of ownership and "renting in" of land. Their average acreage was 258 acres valued at \$68 per acre. On the combination owner-renter farms, an average of 117 acres was owned while 141 acres was "rented in" with average values of \$75 and \$62 per acre, respectively.

The average combination owner-renter farm had 37 percent more land than the average owner-operated

TABLE 2. ACREAGE OPERATED PER FARM AND VALUE PER ACRE BY TYPE OF TENURE, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Type of tenure	Farms	Average	Average value
		operated	per acre ¹
	Number	Acre	Dollars
Owner-operated farms	50	188	78
Renter-operated farms	11	150	64
Owner-renter operated farms	39	258	68
Owned portion		(117)	75
Rented portion		(141)	62
Total and average	100	211	72

¹Excludes value of improvements. The average figure would be \$96 per acre if improvements were to be included.

farm and 71 percent more than the renter-operated farms.

On the farms renting all the land operated, 55 percent were crop-type farms while 18 percent were livestock farms, Table 4. Twenty-six percent of the owner-operated farms were crop farms, and 36 percent were livestock-type farms. Combination owner-renter land control arrangements were of similar frequency on both livestock and crop types of farms, 31 and 28 percent, respectively.

Sixty-three percent of the land used on the 50 "owner" farms was used by those emphasizing livestock while the other 37 percent was operated by crop and crop-livestock farms, Table 4. The same condition existed in the "owner-renter" category. In contrast, crops were emphasized on the 11 "renter" farms; 54 percent of the total acreage was used on crop and crop-livestock farms, compared with 46 percent on livestock and livestock-crop farms.

LAND USE BY TYPE OF FARM

The largest average total acreage was found on livestock-crop farms, and the smallest was in the crop

TABLE 3. OVERALL LAND USE, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Land use	Average per farm	Proportion of	
		Total land	Subclass of land
	Acre	Percent	Percent
Cropland			
Cropped	40	19	77
Idle	12	6	23
Total	52	25	100
Pastureland			
Improved permanent	21	10	15
Unimproved permanent	92	44	67
Woodland	25	12	18
Total	138	66	100
Woodland			
Commercial	9	4	47
Other	10	5	53
Total	19	9	100
Other land	2	1	100
Grand total land	211	100	100

farm category, 353 and 128 acres, respectively, Table 5. The average for all farms was approximately 211 acres. Livestock-crop farms had 67 percent more total land than the average of all farms, and crop farms had 39 percent less. The livestock farm group was slightly smaller acreage-wise; crop-livestock was a bit larger.

On the average, one-fourth of the 211-acre average farm was devoted to cropland. As might be expected, crop farms had the highest proportion of total land in cropland. Both livestock-crop and crop-livestock farms had more absolute crop acreage, however.

Two-thirds of the average of all farms, or 138 acres, was in pastureland. Much of this was unimproved. All types except crop farms had more pasture acreage than the average of all farms. Seventy-five percent of the land on the average livestock farm was in pastureland, one-fourth of which was improved.

Six to 13 percent of the land on the various types of farms was woodland, approximately half of which was designated as "commercial timber."

CROPLAND USE

There was an average of 52 acres per farm in cropland on the 100 full-time commercial farms, 23 percent of which was idle, Table 3. An average of 41 percent of the cropland was planted to corn and cotton in about equal acreages, Table 6. Small grain crops were third, with about 14 percent of the planted cropland. Vegetable and fruit crops are still grown widely in some areas, although acreages are declining.

Seventeen of the 31 livestock farms had corn for grain, with an average of 11 acres per farm, Table 7. Ninety-four percent of the livestock-crop farms planted corn averaging 13 acres per farm. Crop-livestock farms had similar amounts, and 70 percent of the crop farms had 10 acres of corn per farm.

Only 6 of the livestock farms had cotton, while 23 of the crop farms planted the crop. The average acreage per farm planting cotton was 10 acres on livestock farms, compared with 18 on the crop farms and 15 and 14 acres, respectively, on the livestock-crop and crop-livestock farms.

Livestock-crop farms on which small grains (mainly oats) were planted for grain, had greater acreages in crops than any of the other type farms. One farm in four planted small grains. The average acreage of the four farms was 105 acres—more than three times that on livestock farms and four times that on crop-livestock farms.

PASTURELAND USE

On all 100 farms studied, nearly 1 acre in 7 of "total pastureland" was improved, Table 8. Two-thirds was unimproved, and 18 percent was "woodland pasture." This unimproved pastureland was essentially "cleared" of trees and big bushes. Woodland pasture is not of significant forage value.

TABLE 4. PROPORTION OF THE FARMS AND ACREAGE BY TENURE AND TYPE OF FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Tenure and type farm	Farms		Acreage	
	Number	Proportion	Acres	Proportion
	Number	Percent	Acres	Percent
Owner				
Livestock	18	36	3,651	39
Livestock-crop	6	12	2,264	24
Crop-livestock	13	26	2,399	26
Crop	13	26	1,077	11
Total	50	100	9,391	100
Renter				
Livestock	2	18	382	23
Livestock-crop	2	18	380	23
Crop-livestock	1	9	700	42
Crop	6	55	192	12
Total	11	100	1,654	100
Owner-renter				
Livestock	12	31	2,382	24
Livestock-crop	10	26	3,919	39
Crop-livestock	6	15	1,134	11
Crop	11	28	2,607	26
Total	39	100	10,042	100
All farms	100	100	21,087	100

Approximately 27 percent of the pastureland on livestock farms was improved. Less than 10 percent of the pastureland on livestock-crop and crop-livestock farms was improved. Crop farms had 20 percent in improved pastures.

Crop farms had the greatest proportion of their pastureland as "woodland pasture." Livestock-crop and crop-livestock farms had high proportions of unimproved pastureland.

Labor Resources

Labor use is critical to the productive outcome of farm businesses as well as in other kinds of businesses, especially in an area such as Northeast Texas

TABLE 5. LAND USE BY TYPE FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Land use	Type farm				All farms
	Live-stock	Livestock-crop	Crop-livestock	Crop	
Number of farms	31	18	21	30	100
	Acres per farm				
Cropland	29	93	55	48	52
Pastureland	151	231	148	63	138
Woodland					
(not pastured)	22	27	12	16	19
Other land	2	2	2	1	2
Total	204	353	217	128	211
	Percent				
Cropland	14	26	25	38	25
Pastureland	74	65	68	49	66
Woodland					
(not pastured)	11	8	6	12	9
Other land	1	1	1	1	1
Total	100	100	100	100	100

TABLE 6. MAJOR CROPLAND USES ON FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 100 FARMS, 1957

Crop	Total planted	Proportion of total cropland	Farms planting, northeast Texas, 1957			State (1957) average yield per acre ¹
			Farms	Per farm	Production per acre	
	Acres	Percent	Number	Acres		
Corn	847	21	73	12	16 bu.	24
Cotton	799	20	52	15	218 lb.	308
Small grains	564	14	10	56	195 lb.	771
Forage-grain crops grazed	350	9	12	29		
Other hay	265	7	23	12	1.3 tons	1.2
Peas	207	5	33	6	230 lb.	720
Sorghum hay	180	4	19	10	4.3 tons	1.4
Sweet potatoes	148	4	23	6	84 bu.	98
Peanuts	140	4	6	23	327 lb.	525
Grain sorghum	108	3	7	15	1,889 lb.	1,722
Watermelons	74	2	11	7	1,628 bu.	400 ³
Legume hay	53	1	8	7	1.0 ton	2.1
Tomatoes	43	1	18	2	104 bu.	36
Cantaloupes	10	⁴	3	3	430 lb.	270 ³
Irish potatoes	6	⁴	4	2	71 bu.	54
Other crops ⁵	187	5	32	23		
Total	3,981	100				

Legend:

¹1961-62 Texas Almanac.

²Grazed.

³Estimated on basis of experimental yields.

⁴Less than one-half of 1 percent.

⁵Peppers, cucumbers, blackberries, roses and others.

where the operator and his family constitute almost all the labor supply. Man power requirements and

needed skills are ever changing. New farm operations may make traditional skills obsolete; technological developments may reduce hourly requirements. These changes may leave the family labor force underemployed unless adjustments are made.

TABLE 7. SELECTED CROPS PLANTED AND ACREAGE BY TYPE OF FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Item	Type farms			Crop	All farms
	Live-stock	Livestock-crop	Crop-livestock		
Number of farms	31	18	21	30	100
Number farms planting					
Corn	17	17	18	21	73
Cotton	6	10	13	23	52
Small grains (grain)	2	4	3	1	10
Sorghum (grain)	4		1	2	7
Forage-grain crops grazed or failed	3	2	5	2	12
Sorghum hay	4	5	6	4	19
Legume hay	1	4	1	2	8
Other hay	7	7	7	2	23
Acres per farm planting					
Corn	11	13	13	10	12
Cotton	10	15	14	18	15
Small grain (grain)	30	105	23	15	56
Sorghum (grain)	22		2	9	15
Forage-grain crops grazed or failed	14	62	8	71	29
Sorghum hay	15	16	5	3	10
Legume hay	30	4	1	3	7
Other hay	22	6	7	10	12

EMPLOYMENT LEVEL

The seasonality of labor requirements peculiar to each type of farming affects, in a direct way, the level of employment. Labor requirements are more evenly distributed from season to season on livestock farms than on crop farms, especially those specializing in no more than two or three crops.

The average full-time commercial farm included in this study provided productive employment for about 59 percent of one man's available work time, Table 9 and Figure 4. The remaining 41 percent of the average operator's time was not productively employed because of the seasonality of labor requirements and the lack of business size sufficient to fully employ the available labor. Even though there was not enough productive enterprise on the average farm to employ the operator all the time, some seasonal labor was hired, especially on the farms where crop enterprises predominated.

The average livestock farm had 55 percent enough employment for one man. An average livestock-crop farm had 67 percent employment. Labor requirements for livestock enterprises are practically the same throughout the year. The average crop farm had only 54 percent enough productive work

during the year for one average farm laborer; however, this type farm had severe seasonal labor requirements. There might be certain short periods when there was enough work for three or four laborers. On the average crop-livestock farm, 66 percent enough productive work was available.

The seasonal labor requirements on farms with a predominance of crop enterprises are heavy during the growing season. These seasonal requirements present a labor supply problem time-wise during the year in addition to furnishing too little total productive labor for one man. Addition of livestock enterprises would "even out" labor requirements during the year. On many of the Northeast Texas full-time commercial farms, family labor is available for the required fraction of the year during which extra labor is needed.

LABOR SUPPLY

Most of the labor needed on Northeast Texas full-time commercial farms was supplied by the operator and his family. Some labor was hired because many of the operator's children had left home and because of seasonality requirements.

To the question: "In 1957, did you have any problem getting needed hired labor?", 63 of the 100 operators said "no" and 37 said "yes." All but two of the operators said they needed unskilled labor only when seasonal help was required. Further questions revealed that if the operators were to reorganize and expand their businesses, a much greater percentage of the operators would experience difficulty in getting the kind and amount of hired labor needed. Only

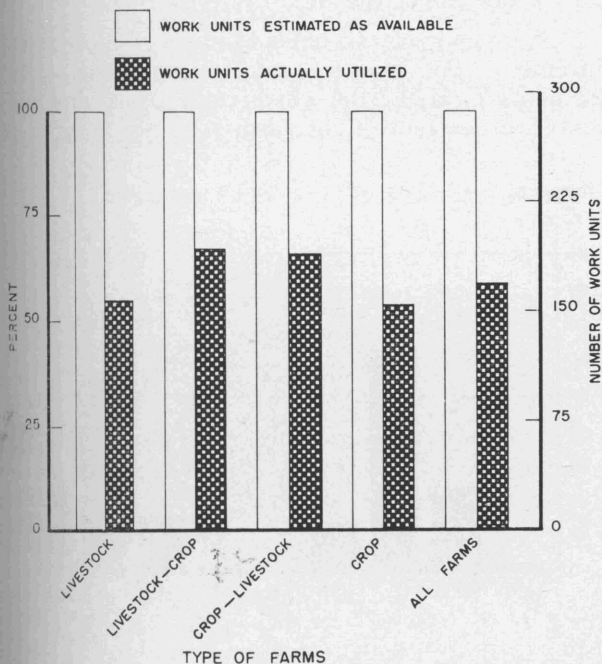


Figure 4. Productive man work units available and utilized by type of farm, 100 full-time commercial farms, Northeast Texas, 1957.

TABLE 8. EXTENT OF DIFFERENT LEVELS OF PASTURELAND IMPROVEMENT BY TYPE FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Level of improvement	Type farms				All farms
	Livestock	Livestock-crop	Crop-livestock	Crop	
Number of farms	31	18	21	30	100
	Acres per farm				
Improved	41	8	14	13	21
Unimproved	89	180	110	29	92
Woodland	21	43	24	21	25
Total	151	231	148	63	138
	Percent				
Improved	27	3	10	20	15
Unimproved	59	78	74	46	67
Woodland	14	19	16	34	18
Total	100	100	100	100	100

two of the 100 operators reported using full-time hired labor, while 78 indicated infrequent periodic use of hired labor.

FARM OPERATOR

The average age of full-time commercial farm operators has been increasing. The average operator surveyed in Northeast Texas in 1957 was 55 years old, compared with 53 years in 1955. In 1957, 26 percent of the operators were 65 years old or over, as compared with 14 percent in 1955. Twenty-five percent of the operators in the earlier survey were 44 years old and under, compared with 18 percent in 1957, Figure 5.

The average age of the livestock farm operator was 59 years, and operators on the other three types of farms averaged a little less than 54 years old.

Thirty-one of the 100 operators in 1957 reported average to bad health. The remaining 69 percent said they were in good health; however, a larger number of them did say that they had health problems, which were not severe enough, in their judgment, to limit their labor capacity significantly.

The average farm operator surveyed received 8 years of formal education, Table 10. Twenty-seven had 6 or less years of schooling; 41 operators were in the 7 to 9-year range, and 30 went to school 10 to 12 years. Only two went to college.

Forty-six of the farm operators said they would

TABLE 9. AVERAGE LABOR UTILIZATION, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Type of farm	Estimated total productive man work units available per farm	Average amount of productive work found on farms	Productive employment level that existed (percent)
Livestock	287	159	55
Livestock-crop	287	192	67
Crop-livestock	287	190	66
Crop	287	156	54
All farms	287	170	59

TABLE 10. AMOUNT OF EDUCATION, 100 FULL-TIME COMMERCIAL FARM OPERATORS, NORTHEAST TEXAS, 1957

Grade range	Operators
Years	Number
3 or less	4
4 to 6	23
7 to 9	41
10 to 12	30
More than 12	2
Total	100
Average years of education	8

take a full-time off-farm job to gain a livelihood if they had the opportunity, Table 11. The remaining 54 said they would not. Of the 54 operators, 34 were 55 years old and above. Many of these stated that they were too old to get off-farm employment.

Capital Investments

In the farming sectors of Texas, as well as in other parts of the United States, higher wage rates, technological innovations and other factors have encouraged the substitution of capital for noncapital resources, especially labor. Such substitution has not occurred to the same degree in Northeast Texas as it has in the more vigorous farming areas.

TOTAL CAPITAL INVESTMENTS

The average total capital investment per full-time commercial farm studied in Northeast Texas was \$24,442, Table 12. Approximately 83 percent of this was in land and improvements, 7 percent was invested in machinery and equipment and 10 percent was invested in livestock. Investment in land and improvements averaged \$96 per acre.

CAPITAL INVESTMENTS BY TYPE OF FARM

Total investment per livestock and livestock-crop farm averaged \$28,221 and \$38,555, respectively; crop-livestock and crop farms averaged \$21,657 and \$14,020, respectively. The farms where livestock enterprises were predominant had proportionately twice as much invested in livestock as did farms where crop enterprises were more important. Land and improvements were greater on livestock farms than on the

TABLE 11. PREFERENCES OF OPERATORS FOR FULL-TIME OFF-FARM EMPLOYMENT, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Age	If you had an opportunity for full-time off-farm employment, would you quit farming?	
	Yes	No
24 or less	0	2
25 - 34	2	0
35 - 44	8	6
45 - 54	13	12
55 - 64	19	12
65 and over	4	22
Total	46	54

crop-livestock and crop farms. The value per acre of land and improvements between types of farms was \$91 to \$108 per acre.

More than three-fourths of the total capital investment in all four categories of farms was for land and improvements. Livestock-type farms had the lowest proportion because of the higher proportion invested in livestock on these farms compared with the other types. The proportion of the total capital invested in machinery and equipment did not vary greatly from one type of farm to another.

Income and Expenses

Total cash incomes and total cash expenses varied widely. Total incomes ranged from \$375 on a crop-livestock farm to \$26,782 on a livestock farm, excluding sales of capital items. Total cash expenditures varied from \$45 on a livestock farm to \$16,559 on another livestock farm, excluding capital purchases. Another livestock farm had total expenditures of \$20,010, of which \$11,330 was for livestock purchased.

Income

The average total income per farm, excluding sale of capital investment items, was \$4,251, Table 13. Approximately 92 percent of the total came from sales of crops, livestock and livestock products, Figure 6. Of the income from farm sales (\$3,919), almost three-fourths was from livestock and livestock products.

The total income on the average livestock farm was \$8,016, which was almost double the average of "all farms." Ninety-five percent of the total income came from the sale of livestock and livestock products; only 2 percent of the total came from crop sales.

Crop-livestock farms tended to have the lowest total incomes. The average total income was \$1,702, 92 percent (\$1,567) of which came from farm sales. Sixty-four percent of the farm sales was from crops.

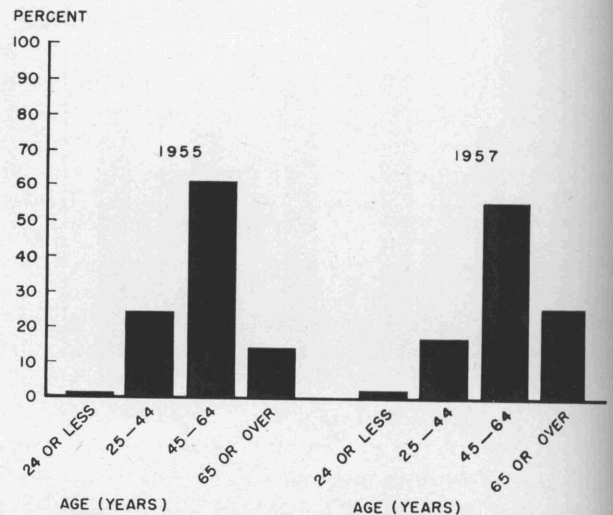


Figure 5. Distribution of farm operators by age groups, full-time commercial farms, Northeast Texas, 1955 and 1957.

One-third of the total income was from livestock and livestock product sales.

The average total income, exclusive of capital sales, on livestock-crop farms was \$4,078, while the average total on crop farms was \$2,248. On both types, 88 percent of the total was from crop, livestock and livestock product sales. Fifty-nine percent (\$2,403) of the total income on livestock-crop farms came from livestock and livestock products, while about 86 percent of the total was from sale of crops on crop farms.

Expenses

The average total expenses on all farms, excluding purchases of capital items, were approximately \$2,236, Table 14. Of this, 54 percent went for feed and veterinary expenses. Approximately \$342 per farm, or 15 percent of the total costs, was spent on seasonal hired labor. Less than 10 percent of the total was spent for seed, fertilizer and pesticides. A little more than 8 percent of the total operating expenditures was for fuels, lubricants and machine hire.

The average livestock farm had total operating expenditures of approximately \$4,275, while on crop-livestock farms the total was \$856. The average total operating costs was \$1,989 on livestock-crop farms and \$1,245 on the average crop farm.

Feed and veterinary expenses made up a large part of costs on livestock-type farms—77 percent, or \$3,285. Only 5 percent (\$69 per farm) was expended for these items on crop farms. Hired labor expense on the average crop farm amounted to \$507, or 41 percent of the total compared with 6 percent on livestock farms. Expenditures for seed, fertilizer, pesticides, machine hire, fuels and lubricants were proportionately more of the total operating costs on crop-livestock and crop farms than they were on the livestock and livestock farms.

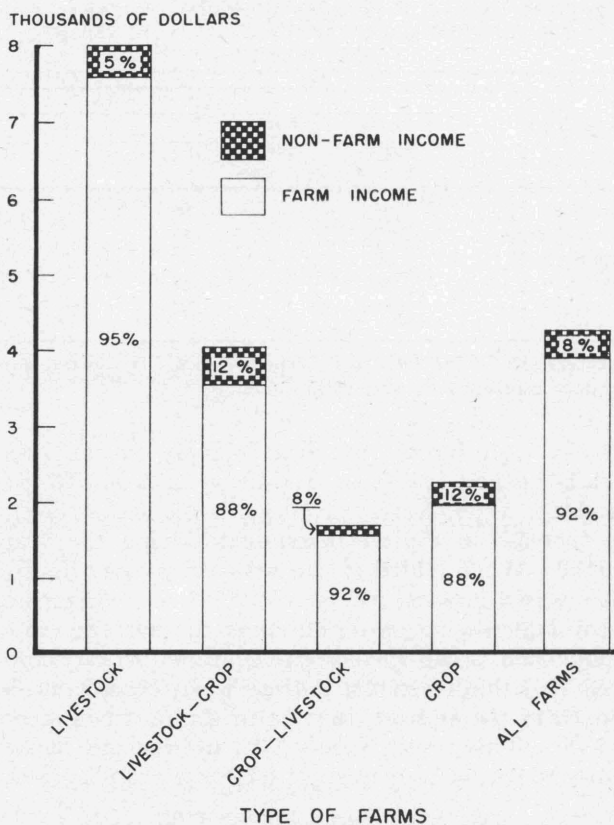


Figure 6. Average income by type farm and by source, 100 full-time commercial farms, Northeast Texas, 1957.

Net Income

The average net cash income resulting from the sales of farm products and purchases of operating resources was \$2,015, Table 15. When the decrease in capital investment of \$39 resulting from depreciation and capital sales and purchases is subtracted, the *net income* was approximately \$1,976. This means that the average total capital investment was not maintained during the operating year.

TABLE 12. AVERAGE CAPITAL INVESTMENT BY TYPE OF FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTH-EAST TEXAS, 1957

Type farm	Capital Investments					Total
	Land and improvements		Machinery and equipment	Livestock	Other	
	Per farm	Per acre				
	Dollars					
Livestock	21,964	108	1,889	4,287	81	28,221
Livestock-crop	32,194	91	2,749	3,362	250	38,555
Crop-livestock	19,176	88	1,253	1,160	68	21,657
Crop	11,840	92	1,261	869	50	14,020
All farms	20,183	96	1,722	2,438	99	24,442
	Percent					
Livestock	78		7	15	1	100.0
Livestock-crop	84		7	9	1	100.0
Crop-livestock	89		6	5	1	100.0
Crop	85		9	6	1	100.0
All farms	83		7	10	1	100.0

¹Less than one-half of 1 percent.

TABLE 13. AVERAGE INCOME BY TYPE OF FARM AND BY SOURCE, 100 FULL-TIME COMMERCIAL FARMS, NORTH-EAST TEXAS, 1957

Type farm	Farm		Income Nonfarm		Total ¹	
	Dollar	% of total	Dollar	% of total	Dollar	Percent
Livestock	7,580	95	436	5	8,016	100.0
Livestock-crop	3,579	88	499	12	4,078	100.0
Crop-livestock	1,567	92	135	8	1,702	100.0
Crop	1,985	88	263	12	2,248	100.0
All farms	3,919	92	332	8	4,251	100.0

¹Excludes sale of capital items except livestock. It was not possible to exclude sale of capital livestock. It is assumed that all capital livestock replacements were farm raised.

Net cash income averaged highest on the livestock farms and lowest on crop-livestock farms, \$3,741 and \$846, respectively. Livestock farms had an average increase in capital investment during the year of \$120. When added to the *net cash income* figure, this resulted in a *net income* of \$3,861 since "increase in capital" is a receipt. Although the average crop-livestock farm had the lowest *net cash income*, crop farms had the lowest *net income* when consideration is given to the average decrease in capital investment of \$300. This resulted in a \$703 net income figure compared with an average of \$716 on crop-livestock farms.

The data indicate that capital investments on the type of farms where crop enterprises were more predominant in the farm organization was not maintained, while increases in capital investments were found on the farms where livestock and livestock products were emphasized.

Returns to Capital Investment and Operator

Labor-Management

The return to the average operator for his labor and management was approximately \$632 after he

was awarded \$1,344 for the use of a total investment of about \$24,442 at 5.5 percent interest return, Table 16. If the average operator had had all his capital investment debt-free, the data indicate that he would have received a total of \$1,976 for his role as investor and laborer-manager. If he had debts on which he must pay interest, he then would not get all of the \$1,344 return to capital investment.

The average livestock farm operator received approximately \$2,309 for his labor and management, and the livestock-crop farm operator received \$193. If the average livestock farm operator had been free of capital debt, he would have received an additional \$1,552 as an investor, or a total net income of \$3,861. Increase in capital investment contributed to the above by \$120 on the average livestock farm and \$225 on the average livestock-crop farm.

The data indicate that both the average crop-livestock and average crop farm operator received labor management incomes of minus \$475 and minus \$68, respectively. If their investment was debt-free, they would have received \$716 and \$703, respectively, as return on their capital investment and their labor and management.

TABLE 14. AVERAGE EXPENSES BY TYPE OF FARM AND BY SOURCE, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Type farm	Labor	Feed, veterinary, medicine	Seed, fertilizer, pesticide	Machine hire, fuels, lubricants	Repair and maintenance	Insurance and taxes	Other	Total ¹
								Dollars
Livestock	255	3,285	156	178	73	151	177	4,275
Livestock-crop	299	732	219	281	127	137	194	1,989
Crop-livestock	273	129	200	109	60	57	28	856
Crop	507	69	233	207	89	83	57	1,245
All farms	342	1,198	200	190	85	109	112	2,236
								Percent
Livestock	6	77	4	4	2	3	4	100
Livestock-crop	15	37	11	14	6	7	10	100
Crop-livestock	32	15	23	13	7	7	3	100
Crop	41	5	19	16	7	7	5	100
All farms	15	54	9	8	4	5	5	100

¹Excludes capital purchases.

TABLE 15. AVERAGE NET INCOME BY TYPE FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Type farm	Farms	Net cash income, excludes capital ¹	Change in capital ²	Net income
	Number	Dollars		
Livestock	31	3,741	+120	3,861
Livestock-crop	18	2,089	+225	2,314
Crop-livestock	21	846	-130	716
Crop	30	1,003	-300	703
All farms	100	2,015	-39	1,976

¹Excludes consideration of sales and purchases of capital items.

²Includes: Depreciation assumed at 5 percent for "Improvements" and 10 percent for "Machinery," none for land or livestock; and, sales and purchases of capital items.

Opinions of Farm Operators

The survey made of the 100 farm operators in 1957 included several "opinion questions." The questions concerned size-of-business, use of additional finances, keeping business records, farm magazine subscriptions, work opportunities for youth in the area and whether the operator would quit farming if he had an opportunity.

Sixty-four of the 100 operators said that they had enough acreage. With \$3,000 additional funds, 11 would buy more land, 35 would improve pastures, 4 buy more machinery, 65 would buy more livestock and 18 had other uses in mind; 4 said their size-of-farm required more machinery, 82 thought their present equipment was sufficient and 14 said they could operate more land with machinery on hand; 64 did not keep farm business records, 89 thought farmers should keep farm records and 58 had no problem in getting enough hired labor.

Seventy-three operators said markets for products raised for sale were no problem (livestock farmers were nearly unanimous); 34 were regular listeners to

TABLE 16. AVERAGE RETURNS BY TYPE FARM, 100 FULL-TIME COMMERCIAL FARMS, NORTHEAST TEXAS, 1957

Type farm	Farms	Net income	Return to capital ¹	Operator labor-management
	Number	Dollars		
Livestock	31	3,861	1,552	+2,309
Livestock-crop	18	2,314	2,121	+ 193
Crop-livestock	21	716	1,191	- 475
Crop	30	703	771	- 68
All farms	100	1,976	1,344	+ 632

¹At 5.5 percent on "end-of-year" capital investment.

market reports on radio and television, 62 were irregular and 4 almost never listened; 64 received one or more farm magazines—of which 63 were "general information" types—and 59 received monthly periodicals.

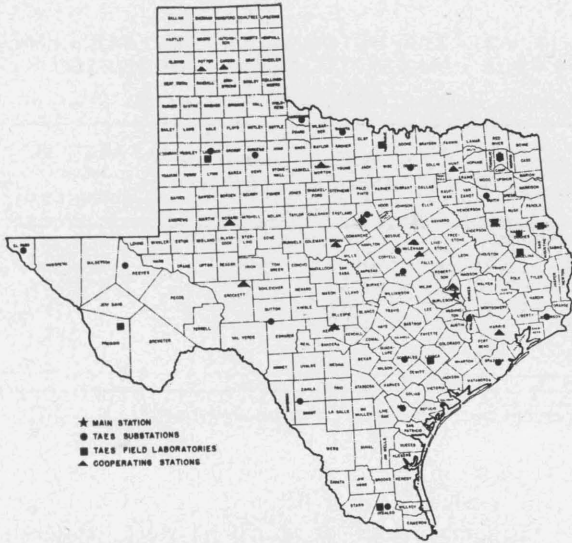
Sixty-one of the 100 farmers surveyed were farmers because they liked farming, 65 thought they had no alternative employment (mainly because of age), and 26 "liked" farming best and thought they had "no alternative"; 46 would quit farming if they had a "good opportunity" wage-wise.

Ninety-one of the operators said that the youth had no opportunity in farming in the area. Eighty thought that the youth had no particularly good employment opportunity off-farm in the area, and 20 felt that they did have reasonably good opportunities.

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State-wide Research



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

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

ORGANIZATION

IN THE MAIN STATION, with headquarters at College Station, are 13 subject-matter departments, 3 service departments, 3 regulatory services and the administrative staff. Located out in the major agricultural areas of Texas are 20 substations and 10 field laboratories. In addition, there are 13 cooperating stations owned by other agencies. Cooperating agencies include the Texas Forest Service, Game and Fish Commission of Texas, Texas Prison System, 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.

OPERATION

THE TEXAS STATION is conducting about 450 active research projects, grouped in 25 programs, which include all phases of agriculture in Texas. Among these are:

- | | |
|--------------------------------------|---------------------------------|
| Conservation and improvement of soil | Beef cattle |
| Conservation and use of water | Dairy cattle |
| Grasses and legumes | Sheep and goats |
| Grain crops | Swine |
| Cotton and other fiber crops | Chickens and turkeys |
| Vegetable crops | Animal diseases and parasites |
| Citrus and other subtropical fruits | Fish and game |
| Fruits and nuts | Farm and ranch engineering |
| Oil seed crops | Farm and ranch business |
| Ornamental plants | Marketing agricultural products |
| Brush and weeds | Rural home economics |
| Insects | Rural agricultural economics |
| | Plant diseases |

Two additional programs are maintenance and upkeep, and central services.

Research results are carried to Texas farmers, ranchmen and homemakers by county agents and specialists of the Texas Agricultural Extension Service

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. Workers of the Main Station and the field units of the Texas Agricultural Experiment Station seek diligently to find solutions to these problems.

Today's Research Is Tomorrow's Progress