

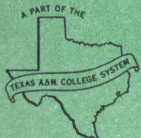
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Production, Production Requirements and Costs, East Texas Dairy Farms



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Summary

In East Texas emphasis has shifted from cash crops to livestock, with dairying becoming the major enterprise on many farms. Such an adjustment has been accompanied with numerous management problems. These problems became increasingly important as milk prices were adjusted downward at the same time that production costs trended upward. Operations on approximately 100 representative dairies were studied to determine the costs and returns of producing milk.

Average annual milk production per cow in the milk herd greatly influenced production costs and in turn materially affected dairy profits.

The average annual production per cow for all farms studied was 6,240 pounds of milk. Ten percent of the herds produced less than 5,000 pounds of milk per cow annually and averaged 4,200 pounds. A similar percentage of the herds produced 8,000 pounds or more per cow.

At prices and costs that prevailed during 1959, cows producing only 4,200 pounds of milk did not pay all production costs. Operators with such low-producing herds were able to pay the cash operating costs, but were not providing for the replacement of their equipment and improvements and were working for a very low wage.

Cows producing at the average level (6,200 pounds of milk annually) paid for all operation costs, provided for interest on the dairy investment, and for upkeep and depreciation, but paid the operator and his family only about 70 cents an hour for the time spent working with the dairy.

Under 1959 price conditions, a herd of 52 cows averaging 8,700 pounds of milk annually provided the dairy farmer and his family a labor and management wage of \$5,300.

Production, Production Requirements and Costs, East Texas Dairy Farms

A. C. Magee, B. H. Stone and S. E. Carpenter*

For years, farming in East Texas was characterized by a basic cropping system of cotton and corn. More recently, emphasis has shifted from cash crops to livestock. Grade "A" dairying has increased rapidly to become a major enterprise and is the only source of income on many farms. In 1955 there were approximately 2,000 Grade "A" dairies in the area.

Rapid expansion of Grade "A" production was encouraged by high milk prices during and soon after World War II. Because of these favorable prices, dairying was profitable, even with relatively high costs. Therefore many herds included a high proportion of low producing cows. As milk prices adjusted downward, the importance of high production increased as production costs trended upward.

Purpose and Method of Study

A study was undertaken to determine the costs and returns of producing milk, to determine variations in costs and returns among different farms and among herds of varying size and to evaluate the effect of various economic factors on dairying in East Texas.

Detailed information concerning production and production requirements was obtained from approximately 100 representative dairies, located in Hopkins, Franklin, Titus, Wood, Camp, Upshur, Smith and Nacogdoches counties, Figure 1. Cooperating farmers were selected at random and included approximately 9 percent of the dairies in these counties.

Data were collected through farm visits at regular intervals during each year. The study was conducted during 1954-59. Business details associated with dairy farming were studied intensively during the first 4 years of the study. A survey of adjustments also was made in January 1960.

Description of Farms

All of the farms studied were planned primarily for the production of Grade "A" milk. Crop pro-

duction centered around the needs of the dairy and in only a few instances were crops grown for sale. It is not common to combine other livestock enterprises with dairying on East Texas farms.

Size of Business

Size of the farm business is shown in Table 1. Although the number of cows per farm increased during the study, there was practically no change in the average number of acres per farm. The total investment for dairying averaged \$951 per cow in 1954. The total investment in 1957 dropped to an average of \$938 per cow mainly because more cows were kept on approximately the same acreage. Throughout the study, the total average investment per cow was greater for the small herds than for those above average size.

In East Texas, dairying developed largely as a family operated enterprise. Some farm operators did all of the dairy work, but the usual practice was for the wife or other members of the family to help at milking time. The regular labor force on the farms studied averaged 1.5 man equivalent in 1954. Normally, dairy operators devoted full time, and other members of the families furnished labor equal to half a man's time. Limited use was made of hired

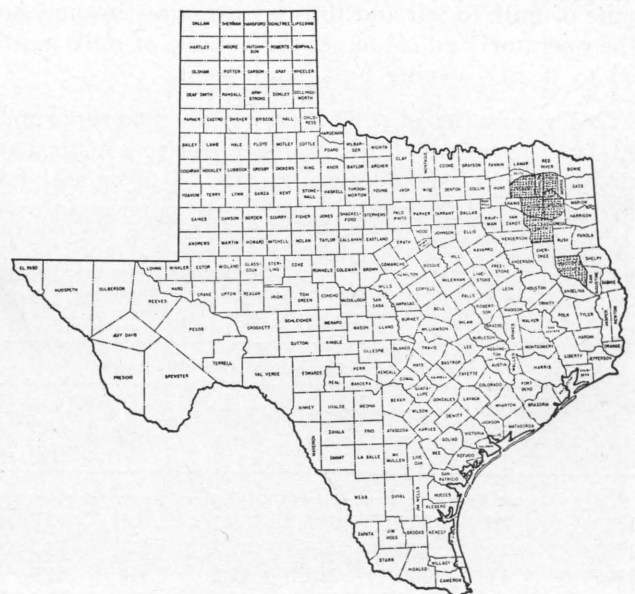


Figure 1. The shaded part shows the location of the eight counties in which the study was made.

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TABLE 1. SIZE OF FARM BUSINESS, 1954 AND 1957

Measure of size	Average per farm	
	1954	1957
Number of cows	41	47
Acres operated	253	255
Capital invested—total	\$39,018	\$44,098
Available labor— man equivalent ¹	1.5	1.7

¹Does not include temporary hired labor.

labor and this was in connection with relatively large herds.

In 1957, the available labor supply averaged 1.7 man equivalents. This increase from 1.5 in 1954 consisted mainly of hired labor and took place entirely among dairies of above average size. Temporary hired labor is not included as a part of the available labor supply.

Although the farm-family operated dairies continue in the majority, the trend is toward larger herds and a more highly specialized business, Table 2. At the beginning of the study, cooperating dairy-men averaged 41 cows in the milking herd. Nearly 40 percent of the herds totaled less than 30 cows. Only 12.5 percent was in this size group by 1959. During the same time, there was a substantial increase in the proportion of dairies in the 50 to 60 cow size group and in those with more than 60 cows. In 1959, more than half the milking herds were in these two size groups. Herds ranging in size from 100 to 150 cows are becoming more common.

Some important reasons given by farmers for increasing the number of cows per farm were: (1) greater efficiency in the use of equipment, (2) increased efficiency in the use of labor, (3) larger volume of milk to sell and thus greater gross income (to the operator) and (4) to get the volume of milk needed to justify owning bulk equipment.

The number of cows kept was not in proportion to land resources. For example, farmers with less than 30 cows kept 1 cow for each 8.6 acres of land in the farm. Dairy-men with herds ranging in size

TABLE 2. DISTRIBUTION OF COOPERATING DAIRIES, GROUPED ACCORDING TO NUMBER OF COWS IN HERD, 1954-57 AND 1959

Year	Average number of cows in herd					
	Less than 20 cows	20-29.9 cows	30-39.9 cows	40-49.9 cows	50-59.9 cows	60 cows and over
	Percentage					
1954	7.5	30.3	24.5	15.1	9.4	13.2
1955	7.1	23.5	35.7	12.2	7.2	14.3
1956	4.9	16.1	32.1	18.5	7.4	21.0
1957	1.5	11.9	29.8	25.4	10.4	21.0
1959	1.0	11.5	19.2	15.4	16.4	36.5

from 30 to 60 cows averaged 1 cow to 5.8 acres whereas those with more than 60 cows averaged 1 cow to 4.6 acres.

Breeds of Dairy Cows and Breeding Practices

When the study was initiated in 1954, all but two of the herds studied were predominantly Jersey. In most instances the entire herd was Jersey. Since then the number of Holsteins has increased greatly. By the end of 1959, Holsteins made up almost 25 percent of the milking herds. At this time, many of the herds consisted entirely of Holsteins.

Although the use of artificial insemination had increased, natural breeding was the usual practice among cooperators. The number of bulls kept per farm ranged from one to three.

Tenure and Use of Land

Although all cooperating farmers owned land, a high proportion rented additional acreage. There was little change in land tenure in 1954-59. Throughout this period about 68 percent of the acreage was owned by the operator, Table 3. On the average, approximately one-third of the cropland, one-fourth of the open pasture and one-half of the woodland pasture was rented. Cash lease arrangements predominated.

Open pasture made up 55 percent of the total acreage. Cropland with 25 percent of the total was next in importance. Frequently the distinction between cropland and open pasture was not clearcut because of the practice of shifting land back and forth between these two types of use, Figure 2.

Use of Capital

An average of 53 percent of the total farm capital was invested in land, Table 4. The investment in land was calculated on the basis of \$100 per acre for open land and \$50 per acre for woodland pasture. An average of 10 percent of the investment was for buildings and improvements, making the investment in real estate 63 percent of the total capital.

Investment in machinery and equipment included a pickup truck, a tractor and other farming tools together with equipment used especially in the dairy. In most instances, the investment for farm machinery was relatively small, due to minor emphasis placed on crop production. The investment in machinery and equipment shown in Table 4 was based on the average depreciated values as reported by individual farmers. Nearly 28 percent of the farm capital was invested in dairy cattle.

Seasonality of Milk Sales

Normally, March, April and May are the months of highest milk production, with peak production frequently obtained in April, Table 5. In 1957, 27.6

percent of the year's production on cooperating dairies came during this period. July, August and September are usually months of low milk production. Only 23.1 percent of the year's production was obtained during this period.

The peak price paid farmers for milk usually occurs during the fall and winter. In 1957, prices above the yearly average were paid from September through February. That year the highest average milk prices were received in November and January and the lowest during April and May.

Variations in Milk Production per Cow

Average annual production per cow for all farms studied was 6,240 pounds of milk. Ten percent of the herds produced less than 5,000 pounds of milk per cow annually and averaged 4,200 pounds. A similar percentage of the herds produced 8,000 pounds or more per cow. For the remaining herds, average production per cow ranged between 5,250 and 7,900 pounds annually.

Among the dairies studied, production per cow was not closely related to size of herd. For instance, the dairies producing less than 5,000 pounds of milk per cow included both large and small herds and averaged 48 cows or approximately the same as the average for all farms studied. Also, among the dairies producing more than 8,000 pounds of milk per cow, there were both large and small herds.

For the purpose of studying requirements and costs of Grade "A" milk produced in East Texas, the herds studied were divided into three groups according to production. The low-producing group included all herds averaging less than 5,000 pounds of milk per cow annually. Herds averaging above 8,000 pounds per cow made up the group designated as "relatively high producers." With the exception of a few of the smallest herds, all other cooperating dairies were included in the group of "average producers."

Herds Grouped According to Production

Milk production per farm and per cow for herds at three levels of production is summarized in Table 6. Average size of the milking herd ranged from 48 cows for low-producing dairies to 52 cows for those milking at the relatively high level. Annual milk production among the low-producing group ranged from 3,410 to 4,870 pounds per cow and averaged 4,200 pounds. On the other hand, yearly production among the relatively high-producing herds ranged from 8,050 to 10,330 pounds per cow and averaged 8,700 pounds. Herds in the in-between group averaged 6,200 pounds of milk per cow.

It was common practice to replace approximately one-fourth of the milking herd annually. In gen-

TABLE 3. TENURE AND USE OF LAND—EAST TEXAS DAIRIES, 1957

Land use	Acres of land per farm—all farms		
	Owned	Rented in	Total operated
Cropland	42	22	64
Open pasture land	102	38	140
Woodland pasture	22	20	42
Meadow	5	1	6
Farmstead	3		3
Total	174	81	255

eral, this practice was followed regardless of production level.

Cull cows usually went for slaughter and varied in weight according to breed. Among the dairies studied, an average of about 250 pounds of animal live weight was sold each year per cow in the milking herd. Among the three groups of dairies summarized in Table 6, the live weight sold annually per cow in the dairy herd averaged 200, 245 and 275 pounds, respectively, for the low-producing, average-producing and the high-producing groups. The high-producing dairies included the largest proportion of Holsteins which accounted for the heavier weight of the cows sold. Heifers not used as replacements were sold also.

Investment data supplied by cooperating farmers for herds producing at three different levels of milk production is summarized in Table 7. The investment in a herd of cows averaging more than 8,000 pounds of milk annually was nearly twice that of the same sized herd averaging less than 5,000 pounds of milk. Of the three groups of dairies, the better the cows the larger the investment in improvements and equipment.



Figure 2. Dairy cows on permanent pasture. Because of its warm, temperate and humid climate, East Texas is well suited to pasture production.

TABLE 4. AVERAGE INVESTMENT PER FARM—EAST TEXAS DAIRIES, 1957

Item	Average per farm— all farms	Percent of total investment
Land	\$23,400	53.1
Building and improvements	4,372	9.9
Machinery and equipment	4,092	9.3
Cattle	12,234	27.7
Total	\$44,098	100.0

Production Requirements and Costs

Production requirements and costs for Grade "A" dairies operating at three levels of milk production are summarized in Table 8.

Land

The dairy farms studied included approximately 5 acres of land per cow. On the average, 82 percent of the farm (4.1 acres per cow) was in open pasture, cropland and meadow, Table 3. There was considerable overlapping in land use from year to year. For example, a field might be in a cultivated crop one year but in Bermudagrass pasture the next. As previously stated, woods pasture was valued at \$50 per acre and the remainder of the farm at \$100 per acre. The amount of land per cow tended to be about the same regardless of the level of milk production.

The capital invested in land alone averaged approximately \$450 per cow in the milking herd.

Labor

There was little difference in the amount of labor expended to feed, milk, maintain sanitation and otherwise care for a herd of low-producing cows compared

TABLE 5. AVERAGE MILK SALES AND PRICES RECEIVED BY MONTHS—EAST TEXAS DAIRY FARMS, 1957

Months	Average monthly milk sales		Average price per cwt. ¹	Percent total annual milk sales
	Pounds per farm	Percent of annual total		
January	25,023	8.61	\$5.99	9.38
February	23,650	8.14	5.79	8.57
March	26,862	9.25	5.23	8.81
April	27,114	9.34	4.91	8.34
May	26,172	9.01	4.97	8.15
June	23,100	7.95	5.03	7.27
July	21,905	7.54	5.30	7.26
August	22,263	7.66	5.42	7.55
September	22,962	7.90	5.69	8.24
October	24,292	8.36	5.87	8.93
November	23,128	7.96	5.99	8.61
December	24,060	8.28	5.90	8.89
Entire Year	290,531	100.00	\$5.50	100.00

¹Hauling costs not deducted.

with the labor needed for a similar number of high-producing animals. The amounts of labor per cow shown in Table 8 include only the time spent with the dairy enterprise (including feeding the replacement heifers). It does not include labor used in growing feed, improving pastures and maintaining improvements and equipment. The shift to bulk handling made little change in labor requirements for the farms studied.

In this study \$1 per hour was used in calculating the cost of dairy labor.

Among the cooperating farms, most of the dairy work was done by the operator and his family. Here labor was not an out-of-pocket cost. On the other hand, when dairy labor was hired it was a cash cost item. In either instance labor was an important and costly requirement for dairying.

Feed

The quantities of feed per cow shown in Table 8 are the average amounts reported by dairymen in each production group. Feed costs are based on 1959 prices.

Many farmers fed commercially mixed concentrates while others had a ration mixed to their own specifications. In either case, the concentrate part of the ration usually contained 16 to 18 percent protein. It was common practice to vary the protein content somewhat, depending on the quality of grazing and type of roughage available. For example, when good alfalfa hay was fed, the protein content of the grain mix was lower than when forage consisted entirely of grass hay and silage.

The dairies studied did not attempt to grow their own concentrates but depended almost entirely on purchased grains. A common practice on the farms studied was to feed a ration high in concentrates. Cows in the low-producing herds received an average of 1 pound of grain for each 1.5 pounds of milk produced. Cows in high-producing herds received 900 pounds more concentrates than cows in low-producing herds and 500 pounds more than those in herds with average production. However, the cows in herds averaging 8,700 pounds of milk annually gave 2.3 pounds of milk per pound of concentrates used.

Many dairymen purchased all their hay. However, a large proportion of them raised part of the grass hays fed. Bermudagrass provided the bulk of the homegrown hay fed. Legume hay consisted largely of alfalfa purchased from other parts of Texas or from Oklahoma. Locally produced peanut, vetch and clover hays were used in some instances.

During the study, only 11 percent of the herds producing less than 5,000 pounds of milk annually were fed silage. On the other hand, 60 percent of

TABLE 6. SUMMARY OF ANNUAL PRODUCTION FOR DAIRY HERDS PRODUCING AT DIFFERENT LEVELS

Item	Unit	Low producers		Average producers		Relatively high producers	
		Total amount per farm	Average amount per cow	Total amount per farm	Average amount per cow	Total amount per farm	Average amount per cow
Cows in herd	Number	48		49		52	
Cull cows sold	Number	11		11		12	
Young animals sold ¹	Number	5		3		5	
Quantities for sale or use:							
Grade "A" milk	Pounds	201,600	4,200	303,800	6,200	452,400	8,700
Live wt. cull cows	Pounds	9,600	200	12,100	245	14,400	275

¹Largely heifers that were culled before freshening.

the dairies with production over 8,000 pounds per cow used silage. Among the average-producing herds, about 40 percent had silage. Silage was home-grown and was produced largely from forage sorghums or corn and stored in trench silos.

The low-producing cows were fed an average of only 2,035 pounds of hay or hay equivalent (figuring 3 pounds of silage equal to 1 pound of hay). At the other extreme, cows in the relatively high-producing group were given an average of 4,000 pounds of hay or hay equivalent. Cows in the average group received approximately 2,600 pounds hay equivalent per cow.

Hay costs shown for all groups were figured at market value.

The value of silage in this study was based on the total cost of producing and handling it. Included were costs of owning and operating the special equipment required for harvesting and handling a silage crop. Because of the high fixed costs of silage-making equipment, dairies using a large amount of silage had considerable advantage over small herds in the use of this feed. Among the farms studied, dairies using silage were above average in number of cows.

Many of the concentrate mixtures used by East Texas dairymen contain minerals. The cost of such

minerals is included in the price of the concentrate. However, it was common practice to feed some additional minerals, largely salt. The item for minerals shown in Table 8 is for minerals not included in the feed mixtures.

By feeding more hay or hay equivalent, dairymen with high-producing herds depended less upon pasture than did the operators of herds in the average or low production groups.

Pasture costs varied from one farm to another. As used here, such costs include out-of-pocket costs for producing the oats-vetch and Sudangrass used for grazing and expenses associated with native pasture improvement, minus Agricultural Stabilization Conservation payments.

Breeding Costs

Breeding costs for all herds were figured at \$7.50 per cow. This was the amount commonly charged in the area for artificial insemination. Data obtained on the keeping of a bull have indicated there was little difference in the cost of natural or artificial breeding.

Herd Replacement

The common practice among East Texas dairymen was to raise replacement heifers. Normally, about one-fourth of the herd was replaced annually.

TABLE 7. SUMMARY OF INVESTMENT FOR DAIRYING WITH HERDS PRODUCING AT DIFFERENT LEVELS

Item	Unit	Low producers		Average producers		Relatively high producers	
		Amount per farm	Value per farm (dollars)	Amount per farm	Value per farm (dollars)	Amount per farm	Value per farm (dollars)
Land	Acres	240	22,080	228	21,658	249	22,880
Improvements			4,330		5,800		6,600
Dairy equipment			2,465		2,860		3,450
Farm equipment			2,335		2,800		3,400
Cows	Number	48	9,125 ¹	49	12,400 ¹	52	17,166 ¹
Total investment			40,335		45,518		53,496
Total investment per cow			840		929		1,029

¹Includes value of replacements.

In keeping with the trend toward larger herds, most dairymen raised more heifers than were needed for replacement, Figure 3.

Replacement costs shown in Table 8 were based on the costs reported by Carpenter and Stone in Texas Agricultural Experiment Station MP-307 entitled, "Dairy Herd Replacement Costs."

Milk Hauling

This cost varied considerably from one part of East Texas to another, depending on the distance milk was hauled. For the eight-county area studied, the average milk hauling charge was approximately 30 cents per hundredweight. This rate was used for calculating the costs shown in Table 8.

Sanitary Supplies

Such items consisted of washing powders, disinfectants and similar costs. The tendency was for these costs to be about the same per cow regardless of milk production. Average costs reported by dairymen in each group are used here.

Veterinary and Medicine

Men with high producers tended to spend more for medicine and veterinary services than did those with average or low production. Costs used in Table 8 are those reported by cooperating farmers in the respective groups.

Utilities for the Dairy

These include electricity and gas used for the dairy but do not include these items for the operator's residence. When the household and the dairy were on the same meter, the operator's judgment was used in determining the cost of the dairy enterprise.

When hired laborers were furnished utilities as a part of their compensation, this cost was included under this heading.

Association Dues

These were figured at 10 cents per hundredweight of milk, as paid by a large majority of East Texas dairymen. The charges made for participate

TABLE 8. SUMMARY OF INPUT REQUIREMENTS AND COSTS OF PRODUCING GRADE "A" MILK FOR HERDS PRODUCING AT DIFFERENT LEVELS, 1959 PRICES

Item	Unit	Low producers		Average producers		Relatively high producers	
		Inputs per cow		Inputs per cow		Inputs per cow	
		Amount	Cost	Amount	Cost	Amount	Cost
Inputs and costs:							
Land for dairy	Acres	5.0		4.6		4.8	
Labor—dairy	Hours	60	\$ 60.00	62	\$ 62.00	62	\$ 62.00
Feed:							
Concentrates	Pounds	2,900	84.10	3,300	95.70	3,800	110.20
Legume hay	Pounds	365	5.10	750	10.50	1,600	22.40
Other hay	Pounds	1,280	12.80	1,350	13.50	600	6.00
Silage ¹	Pounds	1,170	4.68	1,450	5.80	5,400	21.60
Minerals	Pounds	40	.50	40	.50	40	.50
Grazing:							
Native pasture	Days	194		218		152	
Oats-vetch	Days	54		73		90	
Sudangrass	Days	8		5		15	
Other	Days	11					
Pasture production costs			17.25		16.71		16.81
Other costs:							
Breeding costs			7.50		7.50		7.50
Herd replacement			28.00		32.00		36.00
Milk hauling			12.60		18.60		26.10
Sanitary supplies			2.00		2.50		2.80
Veterinary & medicine			2.10		2.25		5.00
Utilities for dairy			2.50		2.58		2.70
Assn. dues			4.20		6.20		8.70
Farm taxes			2.50		2.33		2.40
Repairs and upkeep:							
Improvements			1.55		1.62		7.50
Equipment			5.13		5.29		7.15
Depreciation			23.37		28.48		31.28
Interest on investment			41.25		46.90		52.80
Total cost per cow			317.13		360.96		429.57
Total cost per cwt. of milk			7.55		5.82		4.94
Total cost per cow less cattle sales			291.13		329.96		394.57
Total cost per cwt. of milk less cattle sales			6.93		5.32		4.54

¹Includes some green chop feed.

ing in the Dairy Herd Improvement Association program or other improvement programs were not included in the costs shown in Table 8. For participating dairymen, the cost of the various improvement programs should be considered in arriving at milk production costs.

Farm Taxes

These vary from one county to another and from one school district to another. In the eight-county area of the study, most of the farm taxes were assessed on the land and a relatively small amount levied on livestock or other farm property. The average dairymen in the study paid total farm taxes equal to approximately 50 cents per acre of land owned.

Repairs and Upkeep

The costs used in Table 8 are the average of costs reported by farmers in the three production groups. In general, these costs for improvements appeared to be low on many of the farms studied. In part, this may have been due to the postponement of needed repairs by some operators. Also, because repair costs were low for new equipment, such costs were minor for the dairy equipment on many farms with new bulk tanks and pipeline milkers.

Upkeep of equipment includes the out-of-pocket cost of operating the farm pickup and repairs and upkeep of dairy barn and milk room equipment.

Depreciation

These costs were based on individual inventories made on the farms studied. Items depreciated include all improvements and equipment. Depreciation was not figured on land or the milking herd.

Depreciation is not a regular cash cost and is something that can often be postponed. However, if a farmer is to continue in business, he must be able to replace worn-out equipment and improvements.

Interest on Investment

Interest on land was figured at 4 percent of the calculated value. The interest charged on land alone amounted to about \$18 per cow annually.

Interest for all other capital items was figured at 6 percent. In all cases, individual farm inventories were used in arriving at these interest costs. Because of the higher valuation placed on the milking herd and because of some difference in improvements and equipment, the interest charge was greatest for herds with relatively high production. The interest cost for these herds averaged \$11.68 per cow more than the average interest cost for low-producing herds.

The farmer who owns his land, cattle and equipment debt free does not have interest as a cash cost.



Figure 3. One-fourth of the milking herd is replaced annually. A calf barn with individual pens is a great help in raising healthy replacements.

However, this capital could be invested otherwise and would yield an annual return.

Major Expense Items

Feed was the largest single item of expense in running a dairy in East Texas. This item made up 39 percent, 40 percent and 41 percent of the total cost for the low, the medium and the high-producing herds, respectively. Expenditures for grazing crops and for pasture improvement are included in these percentages.

Labor, the second largest expense item, made up 18.9 percent of the total cost among low-producing herds. Among the average group, labor accounted for 17.2 percent of total cost whereas among the high-producing group only 14.4 percent of total cost was for labor. Labor may or may not be a cash cost.

Interest on the investment accounted for approximately 13 percent of the total cost of operation for each of the three groups. Only part of this item was a cash cost on most farms.

Herd replacement and the depreciation allowance were other major items of cost.

Five items, feed, labor, interest, herd replacement and depreciation, accounted for approximately 86 percent of all dairy costs, regardless of production level.

Total Costs per Cow and per 100 Pounds of Milk

Dairymen with cows that averaged 8,700 pounds of Grade "A" milk in 1959 incurred total estimated costs of \$429 per cow or \$4.94 per 100 pounds of milk, Column 6, Table 8. On these farms, cull cows and other dairy cattle sales amounted to \$1,820 per farm or \$35 per cow in the milking herd. An adjusted cost was obtained by deducting cattle sales from total costs. For the high-producing group, the adjusted cost averaged \$394 per cow or \$4.54 per 100 pounds of milk.

In 1959, the milk sold averaged about \$5 per hundredweight. This price was 46 cents per hundredweight above the average adjusted costs (total costs minus cattle sales) for cows averaging 8,700 pounds of milk annually. This amounted to \$40 per cow and for the average size herd in this group (52 cows) equaled \$2,080. This represented the amount the dairy operator had left for his ability as a manager after paying all operating expenses, allowing for all overhead costs including interest on investment and a charge of \$1 per hour for dairy labor furnished by the operator or his family. Farm families that did all the dairy work had an additional family income of \$62 per cow. For a herd of 52 cows this amounted to about \$3,200. Under this condition, the labor and management wage for the farmer and his family would be \$5,300.

The total cost of keeping a low-producing cow was \$317 in 1959, Column 2 of Table 8. By deducting cattle sales, this amount was adjusted to \$291 or \$6.93 per hundredweight of milk produced. This was \$1.93 per hundredweight more than the average price paid for Grade "A" milk sold in East Texas during 1959.

At prices and costs that prevailed during 1959, cows producing only 4,200 pounds of milk did not pay all of the costs of production. Operators with such low-producing herds might pay the cash operating costs, but they were not providing for the replacement of their equipment and improvements and were working for a very low wage.

With costs shown in Table 8, cows that produced 6,200 pounds of milk (the average for farms studied) lacked 32 cents per hundredweight paying all costs of production. Stated differently, cows producing above the average level, paid all operation costs, provided for interest on the dairy investment and for depreciation but paid the operator and his family only about 70 cents an hour for the time spent caring for the dairy.

East Texas dairymen have made progress in improving production per cow. In 1954, the average annual milk production for all herds was 5,200 pounds per cow. There was improvement each succeeding year. By 1957, the overall annual average was 6,240 pounds of milk per cow. There is urgent need to speed up the rate at which this improvement is accomplished.

A high level of milk production per cow is a "must" for profitable dairying.

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