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Changes in Milk Production and Marketing in Texas

TEXAS AGRICULTURAL EXPERIMENT STATION
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Summary

While the number of milk cows in Texas decreased 21 percent between 1924-57, the 42-percent increase in production per cow resulted in a 12-percent net increase in total milk production. Cash receipts to Texas farmers from marketing of dairy products increased from 26 to 140 million dollars in that period, and dairy products represented more than 7 percent of the value of all farm marketings in 1957 compared with less than 3 percent in 1924.

During 1924-57 the value of milk and cream used on farms where they were produced decreased 32 percent, while gross farm income from dairy products (cash receipts from sales of milk and cream plus value of milk used for farm consumption and farm butter churned) increased from 70 to 169 million dollars and farm value of milk produced (gross farm income plus value of milk fed to calves) increased from 72 to 172 million dollars. Although only 30 percent as much milk was utilized on farms where it was produced in 1957 as in 1924, farmers marketed three times more fluid milk in 1957 than they did in 1924.

During 1930-57 the number of farms in Texas decreased 41 percent, the number of farms with milk cows decreased one-half and the number of farmers selling milk decreased 36 percent.

Only four-fifths as much milk and cream was utilized in manufacturing dairy products in 1957 as was used in 1929. The amount utilized in butter manufacturing decreased by more than three-fourths and represented most of the total reduction.

While prices received by dairy farmers for whole milk in 1957 were twice as high as prices received in 1924, the parity ratio of prices received during 1957 and 1924 was the same.

Fluid milk marketings under federal marketing order regulations have increased greatly since the first order was established in Texas in 1951. During 1958, federal orders were in effect in seven major Texas milksheds comprising 86 counties. About 60 percent of the milk sold by Texas dairy farmers was marketed under federal order regulations. Indications are that the importance of federal orders in marketing milk by Texas farmers will increase considerably.

Population projections indicate an increase of 21 percent in the Texas population between 1958 and 1968. At the present level of consumption this indicates that in 1968 Texans will consume about 656 million pounds more fresh milk than they consumed during 1958. With the same rate of increase in milk output per cow as was registered in Texas during recent years, dairy farmers in the State can supply this added volume without increasing the number of milk cows on farms.

As compared to 1958, more Grade "A" milk will be sold by fewer farmers in Texas in 1968, and that milk will be produced by fewer cows.

The trend toward ownership of milk products manufacturing facilities by milk producers' cooperatives will continue. The market in Texas for ungraded milk and cream will continue to decline and by 1968 very few, if any, farmers selling milk and cream will remain in the "ungraded" category.

Although bulk milk handling equipment has been in general use on Texas dairy farms only since 1954, approximately 60 percent of Texas dairy farmers had installed bulk tanks on their farms by the end of 1958. If this trend continues, all Grade "A" milk producers in Texas will have bulk equipment by 1968. Intermarket movement of milk in bulk tanks will increase in importance, and, with an improved highway system, the average cost of moving milk will decrease. This will contribute to reducing location differentials and to bringing more uniform prices to producers located in different areas.

Changes in Milk Production and Marketing in Texas

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THE ECONOMIC WELL-BEING of the dairy industry is important to producers and consumers of milk and other dairy products. This industry represents an important segment of the agricultural production of Texas. While only slightly less than 12 percent of all commercial farmers reported selling whole milk in 1954, the farm value of milk produced by Texas farmers amounted to 172 million dollars, and cash receipts from dairy products were more than 7 percent of all farm marketings in the State. The retail value of these dairy products amounted to 280 million dollars, or slightly more than $110 for each family or $33 per person in the State.

There have been great technological changes in the dairy industry in recent years, as has been the case in other agricultural production. Among these changes are the almost universal adoption of the milking machine and, during the past 5 years, the installation of pipeline milkers and bulk handling equipment on about 60 percent of the dairy farms. Through improved breeding and selecting practices, better care and feed, and importation of higher-producing dairy cows from other states, milk production per cow in Texas has increased by one-third during the past 20 years. The establishment of federal milk marketing orders in several major dairying areas in the State serves to give dairy producers greater security and incentives for producing according to market demands.

Dairy farming and the dairy industry in general have become greatly commercialized. The average dairy farmer is selling larger volumes of milk and a larger proportion of the milk produced on Texas farms is marketed now than during any previous time. These changes in the production and marketing of milk have great economic significance to the dairy industry and to consumers of dairy products.

Statistical data concerning the Texas dairy industry are presented in Texas Agricultural Experiment Station Miscellaneous Publication 317.

Production Characteristics

In 1957 the average milk cow in Texas produced 4,170 pounds of milk containing an average of 4.05 percent butterfat compared with an output of 6,162 pounds of milk containing an average of 3.81 percent butterfat for the average milk cow in the United States. Thus, in 1957 the average milk cow on Texas farms produced only 68 percent as much milk as the average for the United States and 72 percent as much total butterfat.

NUMBER OF MILK COWS

Slightly more than 161,000, or 55 percent, of the 293,000 farmers in Texas had 689,000 milk cows on farms on the date of U. S. census enumeration in 1954. This was an average of 4.3 cows per farm reporting milk cows.

Every year during 1932-45 there were more than 1.3 million milk cows on Texas farms. From 1930-35 the number of milk cows on farms increased steadily, between 3 and 4 percent each year. After decreasing slightly during the late 1930's, the number on farms increased again dur-

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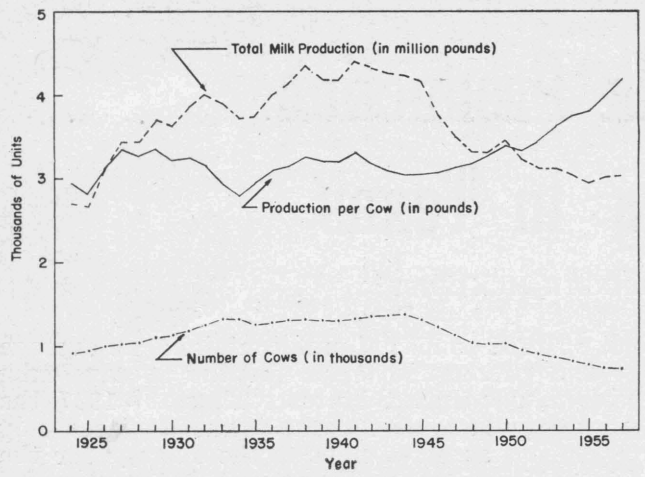


Figure 1. Number of milk cows, milk production per cow and total milk production in Texas, 1924-1957.

ing World War II but began decreasing in 1946. Since 1946 the number has decreased 46 percent.

Several factors account for the larger-than-average number of milk cows on Texas farms and ranches during the depression and World War II years, and for the great decline since 1946.

Widespread and severe damage by the boll weevil induced greater diversification of agriculture in cotton-producing areas and, among the alternatives to cotton farming, dairying was attractive to a large number of farmers. About the same time the disappearance of cattle tick fever removed one of the major obstacles to the livestock and dairy industries. During the depression, adding one or two milk cows to the farm herd and selling milk or cream was one way in which many small farmers could add to farm income.

During World War II the increased demand for milk and butterfat with the resultant higher-than-average farm prices for dairy products induced many Texas farmers to milk more cows and sell more milk. However, milk production per cow decreased during both periods of increasing

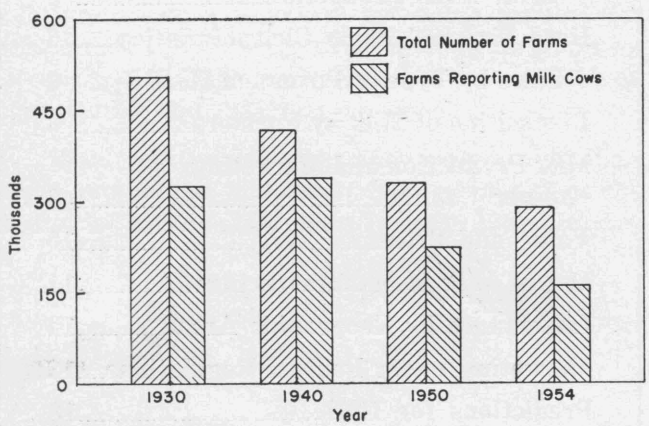


Figure 2. Total number of farms and number reporting milk cows in Texas, 1930-1954.

milk cow numbers, which indicates that many cows with lower-than-average output were being milked.

Since the end of World War II the decreased demand for milk and butterfat, relatively lower prices to dairymen combined with more rigid sanitary requirements for Grade "A" milk, and the higher cost of new equipment required resulted in many commercial dairymen going out of milk production. Also, the wider spread between Grade "A" and ungraded milk prices caused many smaller ungraded milk producers to go out of the dairy business.

The general decline in the number of farm families in the State and the increased specialization of Texas agriculture also contributed greatly to the large decrease in the number of family milk cows in the State.

PRODUCTION PER COW

Traditionally, the average milk cow on Texas farms produced from one-third to one-fourth less milk than the average for the United States. Although the annual volume of milk produced per milk cow in Texas increased from 3,000 pounds to almost 4,200 pounds from 1924-57, the output per cow in Texas during 1957 was only two-thirds that of the United States average of 6,200 pounds. Therefore, while great strides have been made by Texas farmers, dairymen in other sections of the country also have increased greatly the milk-producing capacity of their herds.

Since 1924, milk production per cow in Texas has increased almost every year except during 1932-35 and 1942-45. The largest actual yearly increase in the volume of milk produced per cow occurred during the 5-year period, 1953-57.

There are several reasons for the decline in milk output per cow during these two periods and the above-average increase during the last 5 years. During 1932-35, and also during World War II, many farmers with little or no experience as dairymen started milking cows and selling milk as a new or supplementary enterprise. A very large proportion of the cows milked during those two periods were of mixed types that produced less milk than the dairy type breeds. Lack of experience led to improper herd care and management, resulting in inefficient production.

During the period immediately following World War II the relatively large increase in milk production per cow was due primarily to the following factors:

1. The abnormally high prices paid farmers for whole milk of Grade "A" quality resulted in many dairymen shifting from ungraded to Grade "A" milk production while, at the same time, upgrading their milking herds and improving their herd management practices.

2. Improved pastures resulted in high-quality feed supplies throughout the year.

3. High prices received by farmers for cattle in the late 1940's caused many dairymen to cull their dairy herds and to eliminate low-producing milk cows.

4. Artificial insemination became more widely adopted during the war and immediate postwar periods, which resulted in further improvement of dairy herds.

5. Further elimination of 176,000 farm family milk cows (many of which were low milk producers) from 26 percent of Texas farms between 1940-54 also contributed to increasing the average milk output per cow.

6. Participation by a higher percentage of dairy herds and cows in the Dairy Herd Improvement Association program also has been a factor. The average milk production of cows under the program amounted to 8,314 pounds of milk during 1957 compared with a State average production per cow of 4,170 pounds. The better dairymen usually are the ones entering the program. Inefficient dairymen who enter the program are increasing their efficiency and, through the DHIA program, farmers are in a better position to evaluate the output of individual cows and eliminate the low producers from their herds.

The large increase in milk production per cow during the last 5 years is attributed primarily to further increases in the efficiency of dairymen, improvements in breeding practices leading to increased milk output and heavier culling of inefficient or low-producing cows. Also, increasing costs of producing Grade "A" milk and lower prices for milk are forcing many inefficient dairymen with low-producing cows out of dairying.

Probably of greater significance than any other factor leading to increased total milk sales per farm has been the change from 10-gallon cans to bulk tanks and pipeline milkers on a larger percentage of Texas dairy farms during recent years. While the bulk tank and pipeline system of operation has greatly increased the efficiency of dairymen, it also has resulted in much higher equipment cost. In order to justify those higher costs, and to utilize time and equipment closer to capacity, most dairymen strive to increase their milk production. They can do this only by milking more cows or obtaining higher producing cows, or both. Most dairymen in Texas with bulk equipment are doing both, and are obtaining Holstein milk cows from concentrated dairy areas of the North Central states while increasing the size of their milking herd and total milk output.

A study conducted in 1957 indicated that dairy farmers with bulk tanks increased their milk production by 24 percent during the 12 months previous to the study while those without bulk tanks increased output by only 3 percent. Bulk tank owners reported an average increase in milk production per cow of 1 pound per day after operating with the bulk system 1 year. Results of that study are reported in TAES Bulletin 894.

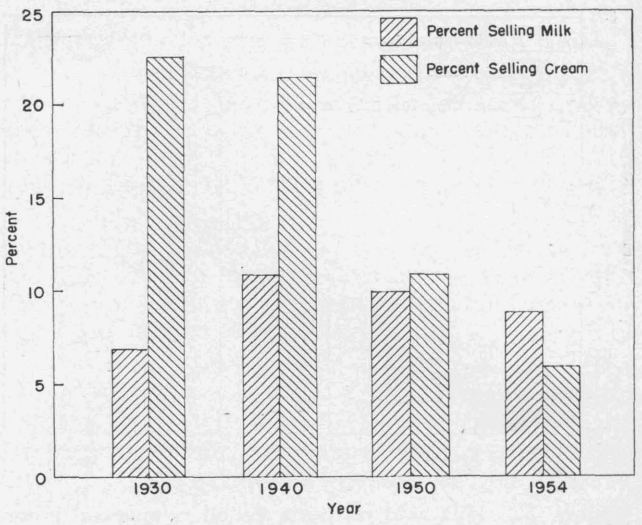


Figure 3. Percent of farms reporting milk cows from which milk and cream were sold, 1930-54.

Higher prices for whole milk relative to prices for butterfat also have been a contributing factor and many Texas dairy farmers are emphasizing volume milk production more than they are high butterfat content of the milk. During 1950-57 the percent butterfat content of milk produced in Texas decreased from 4.45 to 4.05, while for the United States as a whole the butterfat content decreased from 3.96 to 3.81.

TOTAL MILK PRODUCTION

Average yearly total milk production in Texas during the past 5 years was less than during any 5-year period for the past 35 years. Although production per cow increased 23 percent from World War II to 1953-57, the decrease by 42 percent in number of milk cows resulted in a decrease of 29 percent in total milk production be-

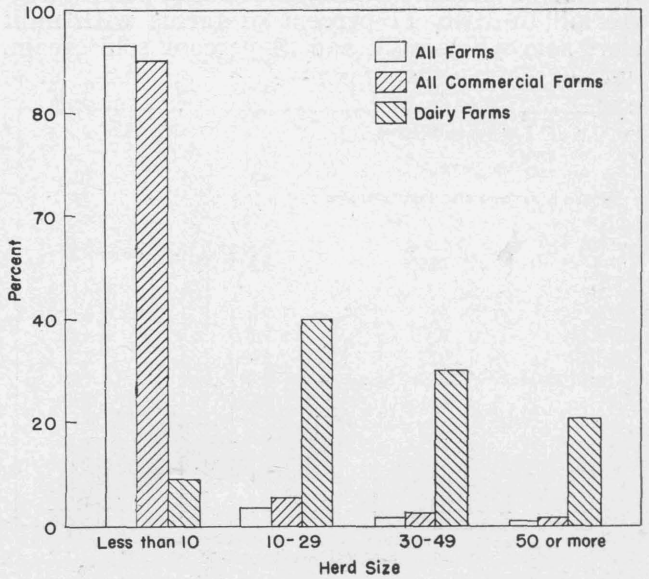


Figure 4. Percentage of all farms, commercial farms and dairy farms by herd size, 1954.

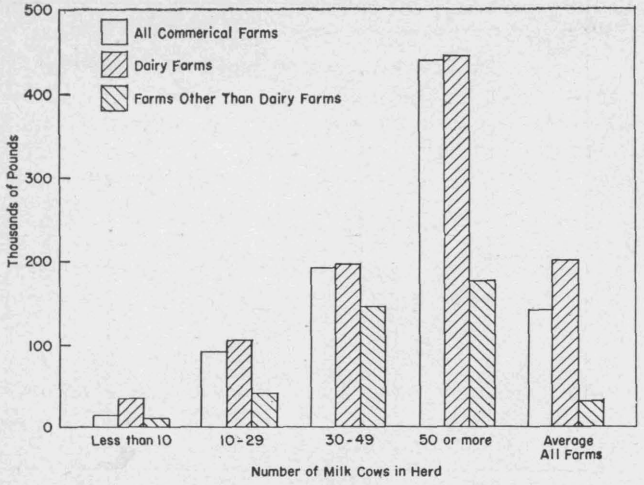


Figure 5. Milk sold per farm for all commercial farms, dairy farms and farms other than dairy farms in Texas, by herd size, 1954.

tween those two periods. Thus, total milk production in the State over the years actually has decreased because the reduction in the number of cows has been greater than the increase in production per cow. However, during the past 3 years total production has been increasing because of the rapid increase in production per cow and the slowing down of the decrease in number of milk cows.

Total milk production, production per cow and number of milk cows in Texas from 1924-57 are shown in Figure 1.

Herd Size and Farm Characteristics

While the total number of farms in Texas decreased 30 percent during 1940-54, the total number of farms reporting milk cows decreased 52 percent and farms reporting whole milk sold decreased 61 percent during that same period, Figure 2. In 1940, 11 percent of farms with milk cows sold whole milk and 21 percent sold cream.

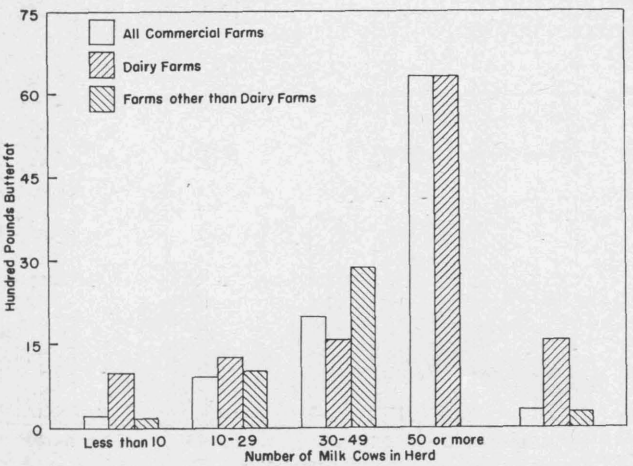


Figure 6. Cream sold per farm for all commercial farms, dairy farms and farms other than dairy farms in Texas, by herd size, 1954.

However, by 1954 only 9 percent of farms with milk cows sold milk and less than 6 percent sold cream, Figure 3.

Between 1940-54 the rate of decrease in number of dairy farms in the State was about equal to the rate of decrease of all farms. There were 36 percent fewer dairy farms in Texas in 1954 than in 1940. However, the average farmer selling whole milk in 1940 sold slightly less than 30,000 pounds while in 1954 he sold more than 120,000 pounds of milk, compared with 34,000 pounds in 1944 and 62,000 pounds in 1949.

The number of milk cows per farm which reported milk cows increased from 3.3 in 1930 to 4.0 in 1940, and 4.3 in 1954. This indicates that the average farmer with milk cows increased his herd 33 percent during that 25-year period.

SALES BY TYPE OF FARM AND HERD SIZE

The 8,357 farms classified as dairy farms in 1954 sold 88 percent of the whole milk but only 16 percent of the cream marketed by all Texas farmers. Although 99 percent of dairy farmers reported selling whole milk, only 3 percent sold cream. Most dairy farmers and other commercial farmers selling cream are small producers, Figure 4. For all commercial farms and dairy farms only 32 percent of the cream sold came from producers having 10 cows or more. Ninety-one percent of all commercial farms and 44 percent of dairy farms selling cream in 1954 had less than 10 cows.

In 1954 only 3 percent of the whole milk sold by all commercial farmers in Texas came from the 30 percent of farms with less than 10 cows while the 70 percent of farmers who had more than 10 cows sold 97 percent of the milk. Of the milk sold by dairy farmers, 99 percent was sold by farmers with more than 10 cows and only 1 percent came from the 8 percent of farmers having less than 10 cows. In 1954 dairy farmers sold six times more milk and cream on the average than other farmers did, Figures 5 and 6. Table 1 indicates by size of herd the number of farms, and the average volume and value of milk and cream sold by all commercial, dairy and other farms in Texas in 1954.

Disposition of Milk by Farmers

The distribution pattern of milk produced on Texas farms has shifted greatly during the past 35 years. More than 6 out of every 10 pounds of milk produced in Texas during 1924-28 were utilized on the farms where produced, and less than 4 pounds entered commercial channels. In 1953-57 about 2 out of every 10 pounds were utilized on farms and almost 8 pounds were marketed. This indicates the high degree of commercialization of the Texas dairy industry during recent years which resulted from the response of dairymen to supply fluid milk to an increased urban population, and from a greater degree of specialization on the part of many dairy farmers

who previously included dairying as supplementary to cotton or other cash crops.

Total marketings of milk and cream equivalent by Texas farmers increased from about 1.1 billion pounds per year in 1924-28 to 1.7 billion pounds in 1930 and to more than 2.3 billion pounds per year in 1953-57. This is an increase of 49 percent from 1930-57. Although total milk production on Texas farms decreased by 17 percent, yearly whole milk sales by Texas farmers increased from 535 million pounds to more than 2.3 billion pounds, or 3⅓ times, during 1930-57 while utilization of milk on farms decreased by more than 71 percent.

While the market for whole milk was of secondary importance in the early years, 1924-57, it became of primary importance during World War II and total sales continued to increase through 1957. Three of the more important reasons for this increase were:

1. The rapid rate of urbanization in the State during this period as shown by the increase in the urban population in the State from 3.5 to 8.2 million, or an increase of 134 percent during 1930-57.

2. The continuous increase in consumer income following the end of the depression in 1936 accounts for a large part of this increase, since consumer buying power is one of the more important factors affecting fluid milk consumption.

3. The large increase in prices received by farmers for fluid milk relative to prices received for butterfat in cream sales during recent years caused many dairy farmers to produce more for the fluid milk market.

Figure 7 indicates the percentage disposition of milk produced by Texas farmers during 1924-28 and 1953-57. The main factors indicated by this figure concerning the disposition of milk produced by Texas farmers in these two periods are:

1. The proportion of total milk production consumed as fluid milk or cream on farms where produced declined from 26.7 to 14.1 percent.

2. The proportion used for farm-churned butter decreased from 36.1 to 6.7 percent.

TABLE 1. NUMBER OF FARMS, VOLUME AND VALUE OF MILK AND CREAM SOLD PER FARM BY COMMERCIAL, DAIRY AND OTHER FARMS IN TEXAS BY SIZE OF HERD, 1954

Item[1]	Number of milk cows in herd				
	Less than 10	10-29	30-49	50 or more	All farms
Whole milk sold					
All commercial farms					
Number farms reporting	3,723	4,321	2,652	1,867	12,563
Percent of farms	29.6	34.4	21.1	14.9	100.0
Pounds of milk per farm	14,931	91,678	191,855	441,894	142,129
Percent of all milk sold	3.1	22.2	28.5	46.2	100.0
Dollar value of milk sold per farm	815	5,006	10,475	24,127	7,760
Dairy farms					
Number of farms reporting	675	3,282	2,502	1,772	8,231
Percent of farms	8.2	39.9	30.4	21.5	100.0
Pounds of milk per farm	34,687	106,357	194,659	446,953	200,649
Percent of all milk sold	1.4	21.1	29.5	48.0	100.0
Dollar value of milk sold per farm	1,894	5,807	10,628	24,404	10,955
Farms other than dairy farms					
Number farms reporting	3,048	1,039	150	95	4,332
Percent of farms	70.4	24.0	3.5	2.1	100.0
Pounds of milk per farm	10,557	43,305	145,233	175,789	30,937
Percent of all milk sold	2.8	12.0	38.5	46.7	100.0
Dollar value of milk sold per farm	576	2,474	7,930	9,598	1,689
Butterfat in cream sold					
All commercial farms					
Number farms reporting	7,259	662	23	18	7,962
Percent of farms	91.3	8.2	.3	.2	100.0
Pounds butterfat per farm	232	947	1,977	6,310	310
Percent of all butterfat sales	68.2	25.4	1.8	4.6	100.0
Dollar value of cream sold per farm	116	474	989	3,155	155
Dairy farms					
Number farms reporting	120	120	16	18	274
Percent of farms	43.8	43.8	5.8	6.6	100.0
Pounds butterfat per farm	1,153	1,282	1,578	6,310	1,573
Percent of all butterfat sales	32.1	35.7	5.8	26.4	100.0
Dollar value cream sold per farm	577	646	789	3,155	787
Farms other than dairy farms					
Number farms reporting	7,139	542	7		7,688
Percent of farms	92.9	7.0	.1		100.0
Pounds butterfat per farm	216	1,057	2,889		265
Percent of all butterfat sales	5.1	25.4	69.5		100.0
Dollar value of cream sold per farm	108	529	1,445		133

Source: Census of Agriculture, Volume 1, Pt. 26, Texas, U. S. Department of Commerce, Bureau of the Census, 1954.

[1]Value of whole milk and cream sold was determined by multiplying volume sold per farm by the average prices received by farmers.

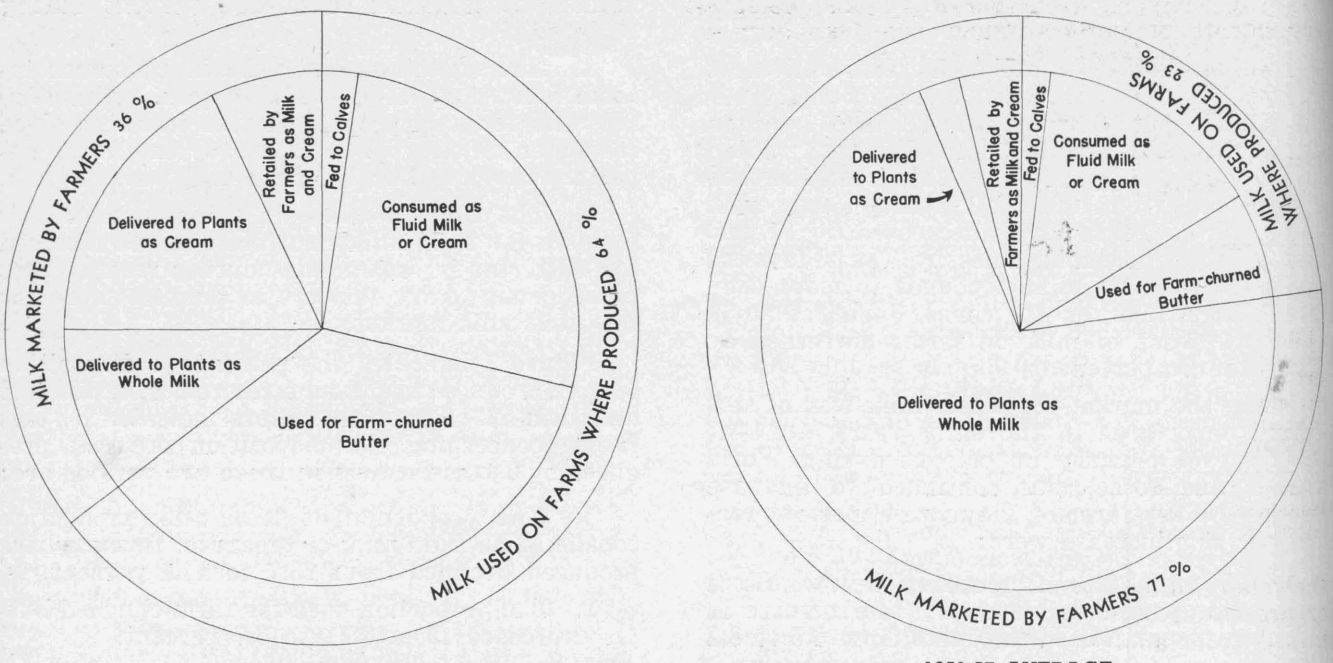


Figure 7. Percentage disposition of milk produced by Texas farmers.

3. The percentage of total output utilized on farms decreased from 64.3 to 22.5.

4. Whole milk sold by producers increased from 11.1 to 71.0 percent of total milk production.

5. Sales to plants and dealers as cream decreased from 17.8 to 2.4 percent while the volume of milk and cream retailed by farmers themselves decreased from 6.7 to 4.0 percent of total milk produced in Texas.

6. Combined marketings of milk and cream by farmers increased from 35.6 to 77.6 percent of total production.

Milk Production and Marketing per Capita

On a per capita basis less than one-half as much milk is produced in Texas as is produced in the United States. Data on volume of fluid milk and milk products imported into Texas for human consumption is not available. However, if the average Texan in 1957 consumed as much fresh whole milk and milk products as the average U. S. citizen did, production in Texas fell short of supplying the demand in the State by the following amounts: 158 million pounds of fresh whole milk, 70 million pounds of creamery butter, 42 million pounds of American cheese, 36 million pounds of cottage cheese and 12 million gallons of ice cream.

In those areas of Texas that are seasonally deficient in fresh milk supplies, considerable quantities are brought in from surplus milk producing areas of the State or from other states. However, indications are that such imports of fluid milk from other states normally comprise only a small portion of total consumption in Texas.

About 820 producers from out of the State delivered milk regularly to handlers operating in Texas federal order markets. An indication of

TABLE 2. PER CAPITA MARKETING AND UTILIZATION OF MILK PRODUCED BY FARMERS IN TEXAS FOR SELECTED YEARS[1]

Year	Population in Texas		Total milk disappearance per capita in Texas	Total milk marketed per capita of urban and rural population without milk cows	Utilization on farms	
	Urban	Farm			Per capita of farm population	Per capita of population on farms with milk cows
	Thousand	Thousand	Pounds	Pounds	Pounds	Pounds
1930	5,825	2,359	618	387	824	1,255
1940	6,415	2,160	644	498	837	1,037
1950	7,740	1,387	438	343	764	1,128
1954	8,479	1,126	352	296	586	1,064
1957	9,138	1,018	328	286	520	1,039
Percent change 1930-57	+57	−57	−47	−26	−37	−17

Source: Computed from data contained in "Production of Manufactured Dairy Products," Agricultural Marketing Service, U. S. Department of Agriculture, for appropriate years.

[1]Amount fed to calves excluded.

TABLE 3. POUNDS OF MILK UTILIZED PER CAPITA IN PRODUCTION OF MANUFACTURED DAIRY PRODUCTS IN TEXAS FOR SELECTED YEARS

Year	Per capita of total population			Per capita of urban population and on farms without milk cows	
	Butter	Ice Cream	All products	Butter	All products
	— — Pounds of milk equivalent per capita — —				
1930	79	12	97	108	132
1940	101	21	155	139	213
1950	29	39	79	33	89
1954	14	29	52	15	56
1957	12	28	49	13	52
Percent change 1930-57	—85	+133	—50	—88	—61

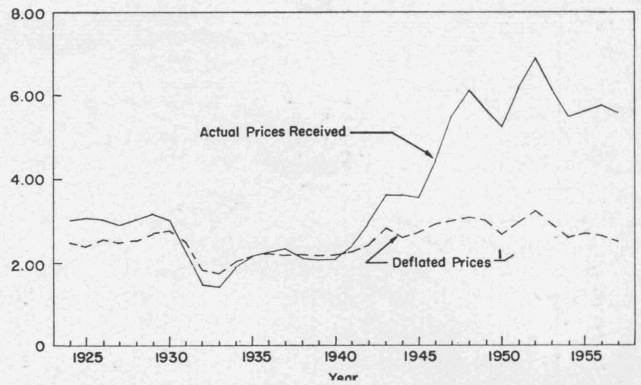
Source: Computed from data contained in "Production of Manufactured Dairy Products," Agricultural Marketing Service, U. S. Department of Agriculture, for appropriate years.

the volume of milk brought into Texas for bottling or processing into manufactured products is obtained from analysis of records of milk market administrators in the State. In 1957, 362 million pounds of milk equivalent from other sources were marketed in the six federal market order areas in Texas. Of this amount, 135 million pounds were delivered by producers residing outside of Texas. This was 5 percent of the 2,464 million pounds of milk and cream equivalent marketed by Texas farmers, or 9 percent of the 1,430 million pounds marketed by Texas producers under federal order regulations and 7 percent of the 1,896 million pounds utilized by plants and dealers operating in federal order marketing areas.

Although a large portion of the manufactured dairy products consumed in Texas is imported from other states, the volume of milk and milk products brought into the State for manufacturing by Texas processing plants is relatively small. A study conducted in 1957 of milk supply areas of Texas processing plants indicated that only one plant obtained part of its fluid milk supplies directly from producers residing in another state and four plants used in their manufacture of dairy products about 14 thousand pounds of milk powder per operating day which they obtained from two other states.

While combined milk and cream marketings by Texas farmers increased 49 percent in 1930-57 and total milk production decreased by 17 percent, total per capita disappearance of this milk and cream in Texas decreased from 618 pounds to 328 pounds, or by 47 percent, Table 2. There are several reasons for this decreased per capita disappearance:

1. Farm people with milk cows traditionally consume more milk and cream than do urban people. The farm population in Texas decreased from 40 percent to 11 percent of the total population during 1930-57. As farm families moved to the urban areas, many decreased their per capita milk consumption.



[1]Computed by dividing prices received by farmers for whole milk by the Bureau of Labor Statistics Index of Wholesale Price, adjusted (1935-39=100).

Figure 8. Annual average prices received by Texas farmers for whole milk, 1924-1957.

2. The decrease in per capita utilization of milk and cream on farms where it is produced indicates that consumption per capita decreased along with less feeding of milk to farm animals other than calves. The amount of butter churned on farms in 1957 was less than one-fifth the volume churned in 1930. Most of the skim milk from farm butter was fed to farm animals in the earlier period.

3. Total milk utilized per capita in manufacturing dairy products in Texas decreased 50 percent during 1930-57. Most of this is represented in decreased per capita production of butter which declined 85 percent during that period, Table 3. Competition by oleomargarine has been

TABLE 4. PERCENT OF TOTAL MARKETINGS OF MILK AND CREAM, AND INDEX OF VOLUME OF WHOLE MILK, UTILIZED IN THE PRODUCTION OF MANUFACTURED DAIRY PRODUCTS IN TEXAS, 1929-57

Year	Total marketings of milk and cream, percent	Index of volume 1929-57 = 100
1929	35	79
1930	34	75
1931	39	90
1932	43	104
1933	48	112
1934	45	96
1935	42	94
1936	44	117
1937	45	130
1938	44	142
1939	45	135
1940	43	133
1941	46	157
1942	45	153
1943	42	145
1944	40	133
1945	37	120
1946	37	107
1947	37	104
1948	31	84
1949	29	82
1950	26	81
1951	23	67
1952	20	59
1953	21	65
1954	19	59
1955	19	58
1956	18	58
1957	18	60

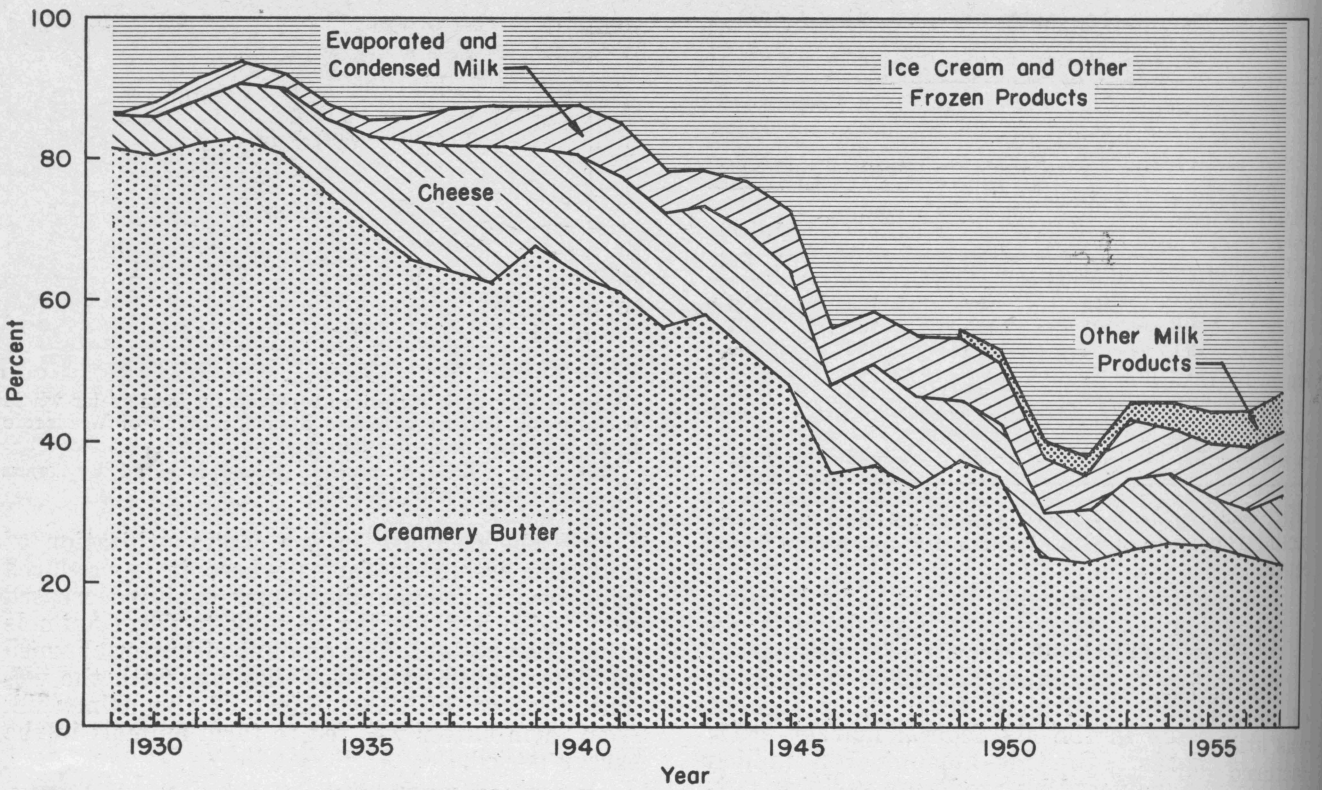


Figure 9. Percent of whole milk utilized in the production of specified dairy products in Texas, 1929-57.

the greatest factor. In 1958, consumption of oleomargarine surpassed butter consumption.

4. Although commercial production of ice cream per capita more than doubled during 1930-50, the output per capita decreased by 38 percent between 1950-57. The decrease in per capita consumption of ice cream since 1950 results from increased consumption of mellorine, the production of which increased in Texas from 6.3 to 19.1 million gallons during 1952-57. Every year since 1952 Texas plants have produced more than 50 percent of all mellorine produced in the United States, and in 1957 the Texas output was five times larger than that of any other state.

5. While both total and per capita disappearance of whole milk and milk fat decreased between 1930-57, the volume of skim milk equivalent utilized in manufactured products in Texas doubled during that time and amounted to 225 million pounds or 24 pounds per capita in 1957. Part of the decrease in whole milk disappearance per capita is explained by increases in disappearance of the nonfat portions of milk which are not included in the computations for whole milk.

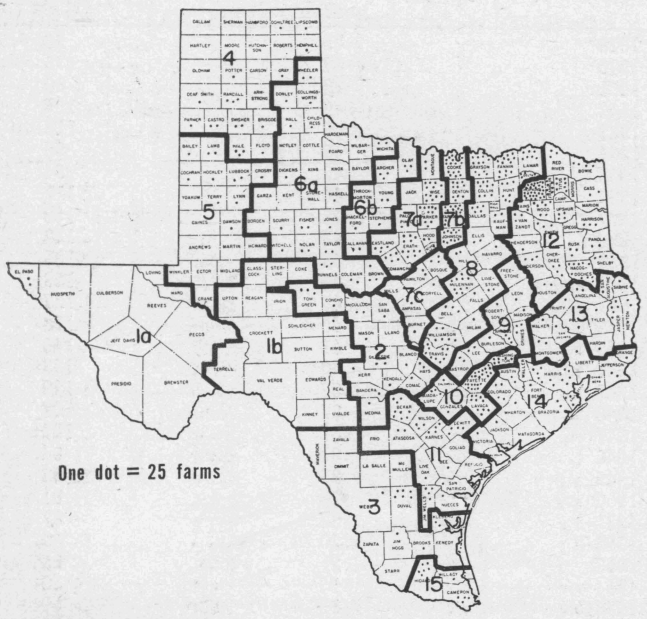


Figure 10. Number of dairy farms by major economic areas in Texas, 1954.

Value and Prices

The gross farm income from dairy products and the farm value of milk produced by Texas farmers in 1957 were 99 percent greater than they were in 1930. However, the peak in farm value and gross farm income occurred in 1953 when the milk produced in Texas had a farm value of more than 217 million dollars. In 1957 the farm value amounted to 172 million dollars, or 21 percent less than in 1952, although only 3 percent less milk was produced.

The decrease in farm value of milk produced by Texas farmers during the past 5 years resulted primarily from reductions in the price received by farmers for whole milk—from $6.89 to $5.56 per hundred pounds—and in the price received for butterfat—from 65 cents to 50 cents per pound—in 1952 and 1957.

From the standpoint of actual value of the dollar received from sales of milk, 1957 was the worst year since 1941 for Texas dairy farmers. Figure 8 indicates prices received by Texas farmers for whole milk during 1924-57. Farmers received an average of $2.40 per hundred pounds for milk in 1941 and $5.56 in 1957. However, actual prices received should be compared with price level changes and, since 1941, the wholesale price level has more than doubled. In terms of fair exchange value, or "parity," the Texas dairy farmer's milk dollar was worth $1.09 in 1957 and $1.05 in 1941 compared to the dollar he received for milk in 1935-39. The price he received for butter in 1957 was worth only 86 percent of the average price he received in 1935-39. Therefore, in terms of 1935-39 prices, the $5.56 per hundred pounds received by Texas farmers for milk in 1957 was worth only $2.48 and the 50 cents per pound received for butterfat was worth only 22 cents.

Use of Milk in Manufacturing

During the 10-year period, 1936-45, an average of more than one billion pounds of whole milk was utilized per year in the production of manufactured dairy products in Texas. The yearly average amount utilized during that period was 36 percent more than the yearly average utliization during 1929-57 and twice the amount utilized during any year since 1950. For the 10-year period, 1933-42, the amount of milk and cream utilized in manufacturing dairy products represented 45 percent of the total milk and cream marketed by Texas farmers, compared to an average of less than 20 percent since 1950. Table 4 shows the percent of total marketing of milk and cream, and the index of volume of whole milk utilized in the production of manufactured dairy products in Texas during 1924-57.

Most of the decline in the volume of milk and cream utilized in the manufacture of dairy products resulted from decreases in production of creamery butter. Production of butter in Texas decreased in 1941-57 from 41.2 million pounds, representing the butterfat of 735 million pounds of milk, to 6.1 million pounds, representing 111 million pounds of milk. About one-seventh as much butterfat was utilized in butter manufacturing in Texas in 1957 as in 1941.

The volume of whole milk equivalent utilized in the manufacture of other major dairy products in Texas also declined. From the peak of 191.8 million pounds of milk utilized in American cheese in 1941, only 44.4 million pounds, or 23 percent of the 1941 volume, were utilized in 1957. For evaporated milk, 86.8 million pounds were utilized in 1941 and only 41.5 million pounds in 1957, a decrease of 52 percent. In ice cream manufacturing, slightly more than 372 million pounds of milk were used in 1946, but only 254 million pounds of milk went into ice cream manufacturing in 1957. Figure 9 indicates the percent of whole milk utilized in the production of specified manufactured dairy products during 1929-57.

Increased marketings of milk for utilization as bottled fluid milk and competition from oleomargarine and mellorine account for a large part of the decrease in the volume of whole milk equivalent used in manufactured dairy products. However, increases in the quantity of skim milk equivalent used by Texas plants in specified processed skim milk products during recent years also are a factor. In 1953-57 the quantity of skim milk equivalent going into cottage cheese manufacturing in Texas increased 88 percent, the

TABLE 5. RELATIVE IMPORTANCE OF DAIRYING BY ECONOMIC AREAS IN TEXAS, 1949 AND 1954

Economic areas	Value of dairy products of all farm marketing		Number of dairy farms of all commercial farms		Value of dairy products of State total		Number of dairy farms of State total		Value of dairy products sold per farm	
	1949	1954	1949	1954	1949	1954	1949	1954	1949	1954
	— — — — — — — — — — — — — — Percent — — — — — — — — — —								— — Dollars — —	
1a	3.9	5.4	2.2	1.6	2.4	4.1	.4	.3	51,159	145,000
1b	.9	1.0	2.3	.8	.5	.4	.6	.2	7,448	20,352
2	4.0	4.7	.3	.3	3.0	2.6	3.3	3.0	7,913	9,473
3	2.9	5.0	4.4	6.8	1.7	2.1	1.7	2.2	8,776	10,742
4	1.4	1.1	2.1	1.9	3.9	3.0	2.5	2.5	13,766	13,208
5	1.0	.5	1.2	.7	2.5	1.3	1.6	1.0	13,923	14,760
6a	2.0	2.6	2.3	2.1	5.5	4.0	5.5	4.7	8,740	9,315
6b	3.9	6.2	4.4	4.4	1.5	1.6	2.0	1.7	6,512	10,637
7a	13.6	21.5	9.0	12.3	7.8	9.3	9.3	11.7	7,185	8,672
7b	23.5	29.4	16.5	19.0	10.7	10.7	10.4	11.2	8,836	10,433
7c	3.6	4.6	2.4	2.8	1.1	1.0	1.6	1.7	5,858	6,584
8	5.6	7.7	3.8	3.4	14.0	13.6	16.5	13.7	7,355	10,809
9	5.6	8.0	2.0	2.8	2.5	3.2	2.0	2.5	11,122	13,981
10	7.0	9.7	3.8	4.6	4.0	4.4	4.8	5.9	7,278	8,127
11	8.2	8.2	5.1	5.0	10.4	10.2	7.0	6.4	12,934	17,298
12	11.5	16.5	5.8	8.9	11.3	13.8	17.3	19.5	5,648	7,745
13	16.1	15.5	6.9	8.4	2.6	2.8	3.0	3.8	7,446	8,055
14	8.7	5.7	6.0	4.2	12.5	10.0	9.0	6.7	12,099	16,054
15	1.6	1.7	1.8	1.7	2.1	1.9	1.5	1.3	12,094	16,373
All areas	4.8	7.4	4.3	4.6	100.0	100.0	100.0	100.0	8,672	10,927

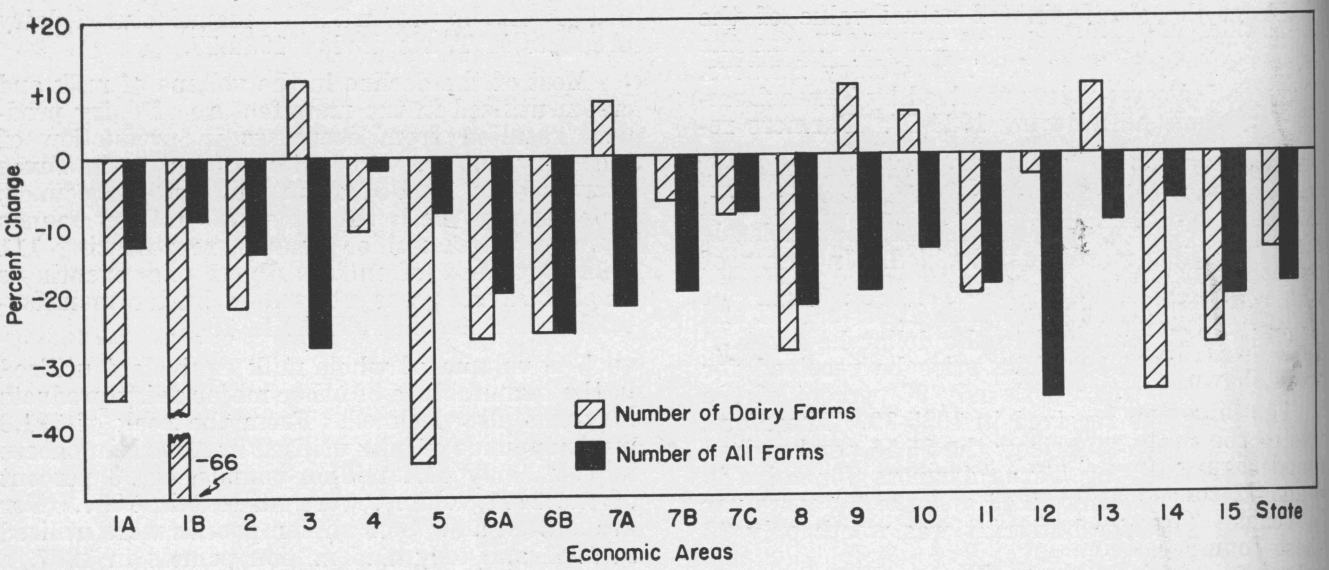


Figure 11. Percent change in number of dairy farms and the number of all farms in Texas from 1949 to 1954, by economic areas.

volume processed into unsweetened condensed skim milk increased 36 percent and the amount manufactured into nonfat dry milk solids increased 350 percent. These three products accounted for 119 million pounds of skim milk equivalent in 1953 and 223 million pounds in 1957, or an increase of 88 percent.

Importance by Geographic Areas

According to the 1954 U. S. Census of Agriculture, commercial dairy farmers were operating in 250 of the 254 counties in the State. However, despite this wide geographic distribution, dairying is concentrated in the North Central, South and Southeastern portion of the State and mostly adjacent to large centers of population.

There were only 74 counties in the State in 1954 where the value of dairy products sold by farmers amounted to $300,000 or more. Farmers in 21 of those 74 counties reported selling dairy products amounting to more than 1 million dollars while farmers in each of Hopkins, El Paso, Bexar and Tarrant counties sold dairy products valued from 3 to 4 million dollars. In 1954, Harris county with 5.4 million dollars led all other counties in the value of dairy products sold by farmers.

A better concept of the relative importance and concentration of commercial dairying in the State is obtained by considering dairy products marketing as a percent of total agricultural marketings. While cash receipts from dairy products sold in 1954 were almost 8 percent of cash receipts from all farm marketings in the State, the value of dairy products sold comprised 10 percent or more of the value of all farm products in only 56 counties. Dairy products brought 20 percent or more of all cash receipts from farm products in 24 counties, 30 percent or more in 12 counties and 40 percent or more in 2 counties.

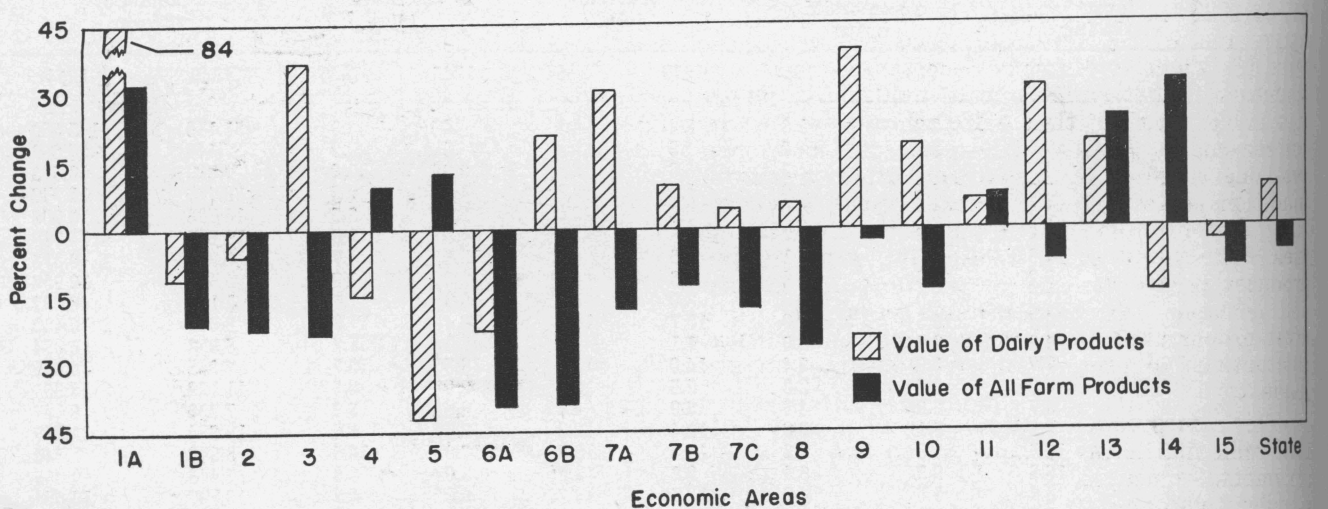


Figure 12. Percent change in the value of dairy products and of all farm products marketed by Texas farmers from 1949 to 1954, by economic areas.

In 1950 and 1954 the U. S. Bureau of the Census compiled agricultural statistics by major economic areas in each state. This facilitates presentation of data on a regional basis and makes it possible to compare the relative importance of the various agricultural enterprises between areas. Each state was divided into several areas in such a manner that all of the counties within each economic area have similar agricultural characteristics and can be used for describing, with reasonable accuracy, the characteristics of the agriculture in the counties within each area. Texas was divided into the 15 major economic areas shown in Figure 10.

The importance of dairying in each area relative to the State as a whole is indicated in Table 5 and Figure 10. In 1954, economic areas 7a, 7b, 8 and 12 contained 56 percent of all dairy farms in Texas. The value of milk sold by farmers in these four areas amounted to 47 percent of the value of all milk sales by Texas producers. In 1949, dairy farmers in these areas comprised 54 percent of all dairymen in the State and sold 44 percent of the milk. The relative agricultural importance of dairying in these areas is higher than it is for the whole State. While Texas dairymen comprised 4.6 percent of all Texas farmers and marketed whole milk amounting to 7.4 percent of the value of all farm marketing in 1954, dairy producers in these four areas comprised 35 percent of all farmers in these areas and sold dairy products valued at 22 percent of all agricultural marketings.

Between 1949-54, areas 3, 9, 7a and 13 had an average increase of 10 percent in number of dairy farms compared to a decrease in the State of 14 percent in dairy farms and 19 percent in all commercial farms, Figure 11. During that period dairy farmers in areas 1a, 3, 7a, 9 and 12 had an increase of 30 percent or more in the value of dairy products sold, Figure 12.

Marketing under Federal Regulations

Under the Agricultural Marketing Agreement Act of 1937 the U. S. Secretary of Agriculture is empowered to regulate the price producers receive for whole milk. The Secretary can do this whenever he determines, from evidence received at a public hearing, that existing milk prices are not reasonable in view of the price of feeds, the available supplies of feeds, and other economic conditions affecting the market supply and demand for milk and milk products in a marketing area. The intent of this authority is to provide producer prices that will tend to equate supply and demand over a reasonable period of time after proper allowances for seasonal and cyclical fluctuations in production and consumption are made.

This atmosphere is attempted by issuing federal milk marketing orders which are legal instruments defining the terms under which handlers who engage primarily in handling milk for fluid distribution in a regulated city market, purchase the milk from dairy farmers.

The first federal milk marketing order in the State was established in October 1951, for the North Texas milk market. Since that time orders have been established in the San Antonio, Central-west Texas, Austin-Waco, Corpus Christi, Texas Panhandle and Red River Valley marketing areas, Figure 13. The designated marketing areas of these seven federal orders include 86 Texas counties, and regulated handlers obtain milk from Texas dairy farmers located in 125 counties.

In October, November and December 1951, a total of 2,400 Texas dairy farmers marketed whole milk under federal order regulations and, in 1957 about 5,100, or 62 percent, of the 8,300 Grade "A" dairy farmers in Texas, sold milk under federal regulations.

Texas farmers operating under the regulations of federal orders marketed slightly more than 1.4 billion pounds of milk in 1957. This was 60 percent of the 2.3 billion pounds of whole milk delivered to milk plants and dealers by Texas dairy farmers. The value to farmers for that milk sold under federal regulations amounts to 85 million dollars.

Predictions for 1968

Population projections indicate that the civilian population of Texas will reach 11.3 million by 1968. This is 21 percent more than the 9.3 million people residing in the State in 1958, Table 6. If the average Texas resident consumes as much fluid milk in 1968 as he did in 1957, the State will be a market for 3,706 million pounds of milk, or 656 million pounds more than during 1957.

Milk production per milk cow increased 38 percent in 1954-57. If the same rate of increase is registered during the next 10 years, Texas dairy cow owners will be producing 4,190 million pounds

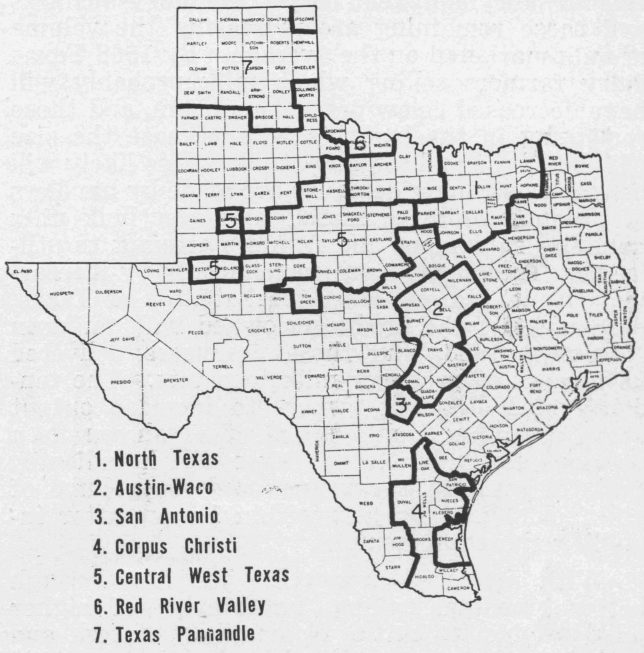


Figure 13. Federal milk marketing order areas in Texas.

TABLE 6. POPULATION DATA FOR ECONOMIC AREAS IN TEXAS

State economic areas	1950[1]	1958[2]	1968[3]	Percent change 1958-68[3]
	— — — — Number — — — —			Percent
1a	253,101	353,134	427,571	+21
1b	75,662	74,344	78,764	+ 6
2	188,106	185,860	202,536	+ 9
3	170,163	176,567	135,024	—24
4	269,408	334,548	427,576	+28
5	340,251	483,236	585,104	+21
6a	458,680	427,478	495,088	+16
6b	61,825	46,465	78,764	+70
7a	145,369	120,809	180,032	+49
7b	456,154	631,924	776,388	+23
7c	65,064	46,465	33,756	—27
8	1,486,519	1,840,014	2,272,904	+24
9	151,915	139,395	123,772	—11
10	132,783	111,516	123,772	+11
11	862,765	1,170,918	1,474,012	+26
12	670,838	557,580	641,364	+15
13	193,218	176,567	191,284	+ 8
14	1,422,837	2,053,753	2,565,456	+25
15	306,536	362,427	438,828	+21
TOTAL	7,711,194	9,293,000	11,252,000	+21

[1]Data from 1950 Census of Population.
[2]Estimated.
[3]Projected.

of milk by 1968, if they maintain the same number (728 million) of milk cows that they had in 1957. If there is no change in per capita consumption of fluid milk in Texas between 1958-68, the State's civilian population by 1968 will consume as fresh whole milk 87 percent of this predicted production. This compares to the 81 percent of total production by Texas farmers that was marketed in 1957.

The number of dairy farms in Texas decreased 33 percent between 1944-54. However, the volume of milk sold per farm increased 32 percent between 1952-57. This indicates that many smaller dairymen went out of the dairy business and those remaining are increasing the volume of milk marketed on the average. By 1968 Texas dairy farmers selling whole milk probably will have decreased below present numbers, and those remaining in the business will increase the size of their herds and sell more milk. This likely will be true as stronger demands are made by handlers of producer milk to install high-cost bulk milk handling equipment and farmers attempt to utilize that equipment more economically by increasing output. In one large market area of Texas, 94 percent of the producers owned bulk tanks in November 1958, and those producers delivered 98 percent of producer milk to plants. The tendency of bulk plant owners to increase output after obtaining that equipment is shown in a previous study in North Texas which indicated that the average owner increased the volume of milk sold by 24 percent within 1 year after installing the equipment.

With increased production per cow through better breeding, culling, importation of higher milk producing cattle from other states, and better management, indications are that by 1968 more milk will be sold by fewer farmers, and that milk will be produced by fewer milk cows.

The number of dairymen selling milk other than Grade "A" decreased from 12,600 to 4,200, or by two-thirds, between 1949-57. Many dairy farmers previously selling ungraded milk have either obtained Grade "A" status or quit the dairy business. The Texas market for ungraded milk and cream has decreased greatly during recent years as fewer processing plants utilizing this product remain in operation. Since a market for ungraded milk and cream probably will not exist in the State, it is doubtful if there will be any but Grade "A" dairy farmers operating in Texas in 1968.

Except cottage cheese plants, the number of processing plants operating in Texas has been decreasing during recent years. A large proportion of fluid milk handlers presently are engaged solely in milk bottling and distribution. In several of the major Texas milk producing areas, producers' associations are acquiring manufacturing facilities and are making efforts to utilize all surplus milk of their producers in their own manufacturing plants. This trend undoubtedly will continue and few manufacturing facilities will be under private ownership by 1968.

As the trend toward ownership of bulk equipment continues and improvements in the highway network progress, producer milk will travel farther to market. Packaged milk sales areas of individual handlers also are likely to increase.

Marketing milk under federal order regulations will increase in importance and by 1968 may represent more than 90 percent of all milk marketed by Texas farmers if a federal milk marketing order is issued in the Houston-Gulf Coast milkshed.

Since dairy producers' associations will control most dairy products manufacturing facilities, they will utilize most of the seasonally surplus milk in their own plants, and only small quantities of milk will be sold to handlers as Class II. Thus, producer prices for milk in the various parts of Texas will be nearly uniform and will vary only by the cost of moving it from surplus to deficit markets. However, with bulk movement and an improved highway system, these costs will be minimized.

Milk handlers will increase the volume of milk distributed on the average, expand their sales areas and retail more milk. The number of distributors is likely to decrease as the smaller ones are unable to (1) compete with larger independents and chains in expanded market areas or (2) benefit from economies of scale. As distributing areas expand further, per unit margins likely will be narrowed. This, coupled with higher cost of new equipment to remain in the fluid milk bottling and distributing business, will probably force small handlers and producer-distributors to merge with one another or sell out to the larger ones.

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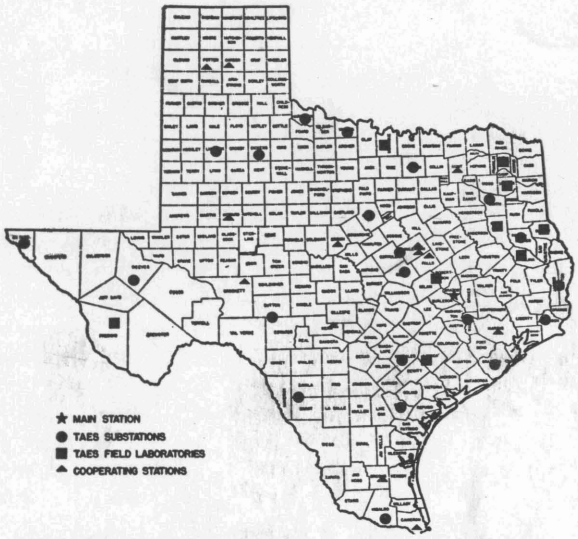

Location of field research units of the Texas Agricultural Experiment Station and cooperating agencies

State-wide Research

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

ORGANIZATION

IN 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. 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 400 active research projects, grouped in 25 programs, which include all phases of agriculture in Texas. Among these are:

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