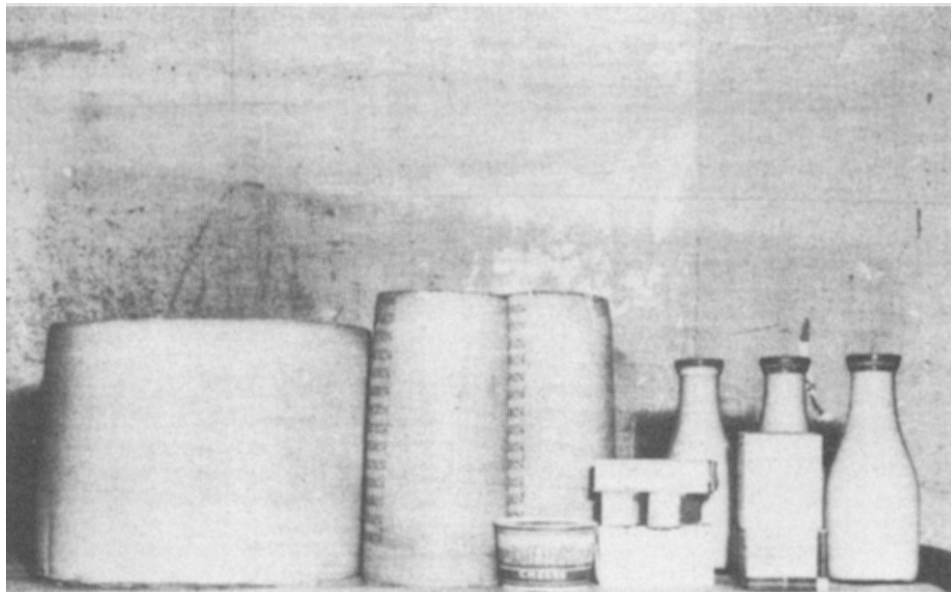


Marketing
DAIRY PRODUCTS
in Oklahoma

CIRCULAR 462



EXTENSION SERVICE

OKLAHOMA A. & M. COLLEGE

SHAWNEE BROWN, Director

STILLWATER, OKLA.

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MARKETING DAIRY PRODUCTS IN OKLAHOMA

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Marketing Dairy Products in Oklahoma

A. W. Jacob

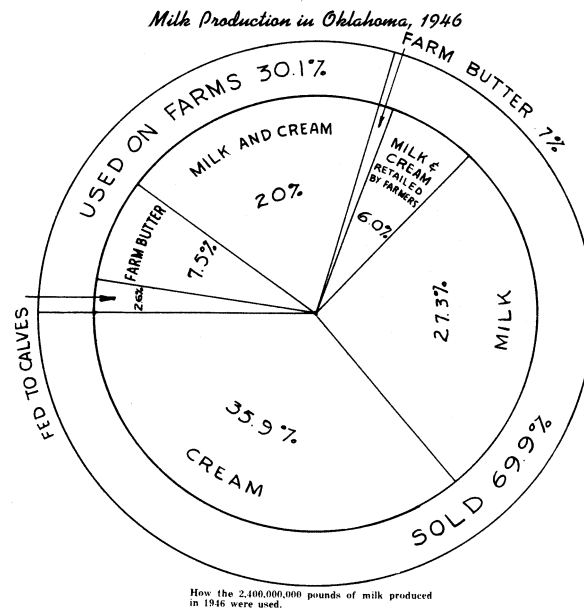
Extension Economist, Marketing

Dairy products were sold by some farmers in each of the seventy-seven counties of the state in 1944.¹ Sales were made by over 86,000 producers. Production was then, and is now (1947), on a wartime expansion level. It is the purpose of this circular to (1) review briefly past and present production trends, and (2) to deal with some of the factors affecting the marketing of milk and cream so that the producer readers may do some sound reasoning and planning to meet the market needs in the years ahead.

Cash Income

In 1946 the Oklahoma cash farm income from the dairy sales was over 53 million dollars. The upward growth and the importance of dairying since 1925 is given in Table I-a of the appendix. While these figures show a substantial growth and importance of the cash income from dairy product sales, it is also important to note that some 30.1 percent of all milk produced is used on the farm, chiefly in the farm home (Chart I).

CHART I



Source: Volume I, Part 25, Oklahoma, 1945 United States Census.

Uses Made of Milk Produced in Oklahoma

The statement is frequently made, "I would like to know how Oklahoma's milk is used". To answer this question the United States Department of Agriculture makes an Annual Use of Milk estimate by states. Let us look at these data for 1946 which show a total annual production from the state of 2,400,000,000 pounds of milk. Milk produced fell into seven major uses. (Chart I).

The three uses on the farm are for fluid milk and cream, buttermaking, and for feeding to calves. This totaled 721 million pounds or 30.1 percent of the total year's production.

The four sales uses are: sales of farm butter, cream (mostly for commercial buttermaking), milk for fluid and manufacturing uses, and milk and cream distributed at retail by farmers. The trends in the manufacture of the major products in Oklahoma are given in Table II-a of the appendix. These four make up 1,679 million pounds of milk or 69.9 percent of the total.

Data on a finer breakdown of the uses of milk for the state are not available. However, the wide uses of milk in the United States for the year 1943 are indicated in Chart I-a of the appendix. Some Oklahoma milk goes to each of these uses in the state and out of state processing plants.

Milk used on the farm had a value of 21.7 million dollars in 1946. The commercial sales had a cash value of 55.3 million dollars. This places the total gross value at 77 million dollars for 1946.

Per Capita Consumption

Since World War I, there has been some upward tendency in the per capita consumption of dairy products. This has varied within the industry for different products. At times some have decreased while others have increased, but for the industry, there is a consistent increase.

Higher nutritional standards, higher quality products, increased income, and improved refrigeration have all, no doubt, assisted in bringing on the changes.

Because of the scarcity of dairy products during World War II, there was considerable rationing of manufactured dairy products. However, regardless of rationing, the higher standard of living and the higher consumer incomes brought an increased consumption of dairy products (Table I).

(See Next Page For Table I)

Table I. Apparent United States Consumption of Dairy Products on a Per Capita Basis, 1935-39 Average and 1947.

	1935-39	Apparent 1947	Percent 1947 is of 1935-39 Average
	Pounds	Pounds	Percent
Total Milk (Wholesale Milk).....	801	799	100
Cheese	5.5	6.7	122
Condensed and Evaporated Milk.....	16.7	20	120
Fluid Milk and Cream.....	340	403	119
Butter	16.7	11.3	68

Source: *The National Food Situation*, United States Department of Agriculture, April-June, 1947, Washington, D. C.

Per capita consumption of fluid milk varies considerably from town to town depending upon the (1) per capita incomes, (2) understanding of the nutritive value of fluid milk, and (3) price of fluid milk per quart.

Data on fluid milk consumption for Oklahoma cities are not available. However, data for Wichita, Kansas, have been made available by the War Food Administration, United States Department of Agriculture. They show a daily per capita consumption of .462 pint of fluid milk and cream for 1939 and 1940.

Relationship of Income to Milk Consumption

As was previously pointed out, income is an important factor in milk consumption. Recently I visited a leader in the milk business. We were discussing the per capita consumption of milk. He indicated that in his area there were many families with low incomes which made the consumption per capita low. The table which follows (Table II) on St. Louis, Missouri, gives important data on this for four income groups.

Table II.
Per Capita Consumption of Milk by Income Groups
St. Louis, Missouri, 1934

Income Group	Weighted Average Annual Income	Daily Per Capita Consumption—Pints	Percent of Average
Under \$1,600	\$1,279	.333	79
\$1,600 to \$1,999.....	1,729	.333	85
\$2,000 to \$2,399.....	2,276	.357	106
\$2,400 and over.....	2,805	.520	123
Average for City.....	2,022	.423	100

Source: *St. Louis Milk Problems with Suggested Solutions*, Illinois Agricultural Experiment Station Bulletin 412, Table 4, Page 101; R. W. Bartlett, University of Illinois, Urbana, Illinois.

This table was in a period when incomes were very low. Dairy farmers remember this period of low prices and consumption. Today's high pay roll (1947) is an important factor in the high consumption of dairy products. The apparent consumption for 1947 for the United States, as a whole, is indicated to be 403 pounds or 1.1 pints per day. See Table I.

Fluid milk and cream consumption in the southern states is much lower than for the northern states. Part of this is attributed to the lower income per capita. In 1940 the per capita consumption for New Orleans, for instance, was .294 pint per day, while for New York City it was .750, and for 41 cities throughout the United States, .583 pint daily.

Milk and Cream Prices

The position of milk and cream prices as they are related to parity is of interest. Parity is the relation of present sales prices to prices of production factors when adjusted to the base period price relationship of 1910-1914. The latest data on these prices is given in Table III.

Table III. United States and Oklahoma Farm Price, Parity and Percentages for May 15, 1947

Commodity	Unit	United States			Oklahoma
		Farm Price	% of Parity	Parity	Farm Price
Milk ¹	100 lbs.	\$3.84	117	\$3.29	\$3.80
Cream	Pound	63.1¢	111	57¢	56¢

Source: Agricultural Prices, Bureau of Agricultural Economics, United States Department of Agriculture, May 1947.

Dairy prices come under the war price support program. Under this program present legislation would guarantee producers 90 percent of the parity price until December 31, 1948.

As prices of dairy products vary a great deal for the seasons, support prices are adjusted by seasons to meet this condition. Within recent years price support operations have been applied by the government by purchasing products from processors. Each processor indicates he had paid producers at least support prices for the raw product. How future operations will be carried out will be determined from time to time.

Storage Holdings — Butter and Cheese

Storage Operations are important in considering the development of a dairy market outlet. Butter and cheese prices would fluctuate more than they do if it were not for storage holdings. Handlers place these products in storage during the flush spring season to be placed on the market during the late winter months when supplies are shortest. These operations tend to hold up the market during the flush production and tend to push it down during other months. Supplies of other dairy products also enter into storage operation. As refrigeration technique is being developed, storage of these may be of more importance.

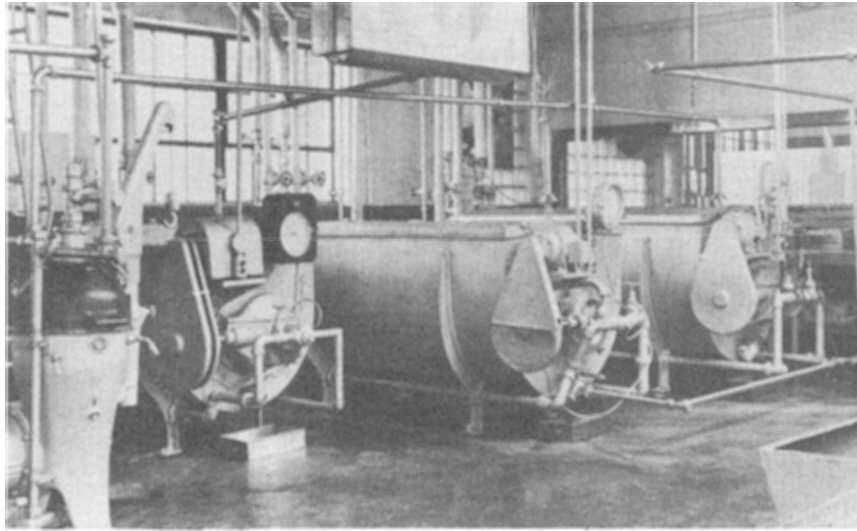
¹ Price per 100 pounds of fluid milk at wholesale.

Quality Standards

Fluid Milk. Quality programs are administered by city councils in incorporated towns and cities. Where producers are interested in a particular market, they should confer with the person in charge. He is usually designated as the "milk inspector". A large number of cities in Oklahoma have adopted the

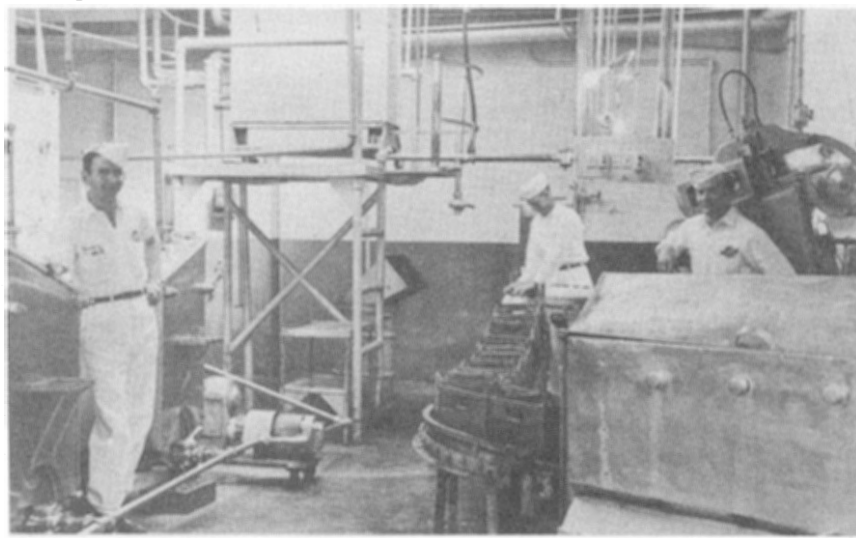


1—A well equipped laboratory is essential in making butterfat tests and checking the quality and uniformity of processed dairy products.



2—Modern and attractive fluid milk pasteurizer and cooling room.

U. S. (Standard) Public Health Milk Ordinance. In these cities the milk inspection program is administered jointly with the Oklahoma State Health Department, State Capitol, Oklahoma City. Strict sanitary regulations along the latest approved ideas are placed in effect to prevent the use of unwholesome milk within the city. The ordinance is now used in 450 towns and cities throughout the United States.



3—Labor saving conveyor—empty case washer (right). Pasteurizers (left). Milk cooler (above).



4—Sanitary—Labor saving methods used in bottling fluid milk. Silver Seal Cap Machine and bottle filler in action.

Manufacturing Milk and Cream must meet the standards set by the rules of the State Board of Agriculture, State Capitol, Oklahoma City, and the U. S. Federal Food, Drug and Cosmetic Act. It is well to have milk and cream quality well above these minimum requirements. Fieldmen of these departments are continually checking raw products as they are delivered to the plants and the finished products as they move into trade channels. These inspections are of great value in securing quality improvements and higher consumer acceptance of Oklahoma dairy products.

The grading of butter, cheese, and other dairy products moving into commerce according to the standards set by the Dairy Branch of Production and Marketing Administration, United States Department of Agriculture, is important in facilitating trading. These grades are a fair index of the quality of milk and cream delivered to processing plants.

Many large creameries have their own "trade name" for high quality products. These are used to supplement or in lieu of the federal grades in some cases.

Market is First

The first question of a man in the dairy business is "How about the market?" Experience has taught dairy farmers that there are many qualities of milk and uses for milk. Each use has its particular quality requirement and producer price. The use is, or should be, in line with the quality of milk. Dairy farmers are interested in selling milk to the processor who uses a high percentage of his receipts for the high priced consumer uses. This means a higher price to the dealer from consumers and nets the producer a corresponding gain in price. The high use milk is usually referred to as Grade A milk or Special milk, Class 1 or Base milk.

Fluid Milk and Cream

Higher prices are paid for fluid milk and cream used for fluid consumption. The reasons for this are: (1) It costs more to produce and deliver this class of milk; (2) Consumers are willing to pay the extra price for quality; (3) Quality standards are regulated by the local city.¹

Milk from producer herds delivered to pasteurizing plants is usually designated by the city ordinance as Grade B milk until it is pasteurized at the plant.¹ It is then designated as Grade A pasteurized (or other special quality milk).

Milk producers who are producer-distributors must deliver to consumers Grade A raw milk which then meets about the same conditions except for pasteurization as does the Grade A pasteurized under most city ordinances.

¹ See paragraph one one page 8 under "Quality Standards".



Dairy stores, located at proper places, are the means of moving larger volume of dairy products. In most markets they are used to supplement grocery stores, others, and door delivery.



Paper bottles, a newer method of packaging milk and cream, are appearing in Oklahoma Markets.

During the war years, Grade B fluid milk (to be pasteurized) was not produced in sufficient quantities, in most cities and towns, to meet local needs since there was some reduction in supply and also a higher per capita demand. The standard public health milk and other ordinances were modified in many cases to meet this expanded need. Lower grade milk was allowed to enter these markets to meet this emergency. Now more milk is becoming available, and these modifications are being removed in most markets.

There is a great seasonal change in the supply of milk produced on dairy farms in Oklahoma.² This usually occurs during the late spring and early summer months; however, in some sections it occurs during the winter months when cattle are on wheat pasture. Unfortunately for the Oklahoma dairymen, the months most frequently of greatest production are the months of lowest per capita consumption of fluid milk. These factors make it important that milk dealers, especially in the larger markets of the state, institute producer price paying plans which assure them of a supply of fluid milk throughout the year and especially in the winter months. Bases for the winter months are established for this purpose. This means that the producer who does not exceed his base production for a pay period does not need to take "manufacturing milk" prices for any of his milk. There are many modifications of this plan in use. Distributors also find it best to have milk of a butterfat test which is near that of the bottled milk they are selling. Lower prices per pound are usually paid for the butterfat above or below the basic butterfat test³ used in the market.

Milk distributors pay some more for "this over-supply of milk" than they do for regular manufacturing milk as they use it at higher prices part of the year and they wish to maintain contact of this source of supply.

As bases have not been discussed or used with producers much during the war years, I feel that this problem will come up for much discussion during the coming months.

Manufacturing Milk

There has been a heavy switch by producers from the selling of cream to that of milk for manufacturing purposes. During the past few years, this switch has been accompanied by increased returns for dairy products. In addition to the splendid domestic market, there was the great need for manufactured dairy products for export to our allies and to feed the military forces. This demand was chiefly for products made from whole milk. This called for increased quantity of production. Since return to peace, a considerable amount of manufactured milk products has been purchased by the government for war rehabilitation uses. Dry milk powder was also purchased for the support price program this spring.

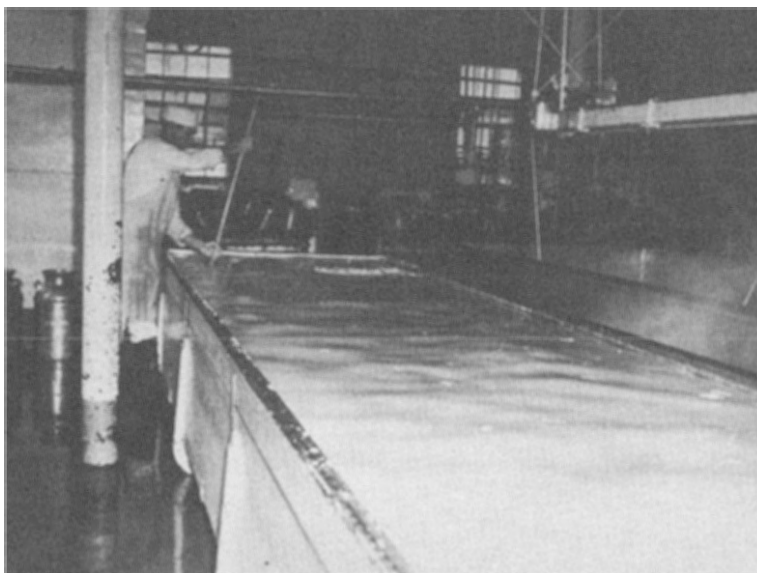
² The seasonal production of manufactured dairy products shown in Table III-a of the appendix. The seasonal production of the fluid milk follows this same trend.

³ Fluid milk prices in City Markets, June 1947 (Monthly mimeographed), United States Department of Agriculture, Washington, D. C. This monthly market report is available from the Bureau of Agricultural Economics upon request and furnishes valuable current information on prices, basic buying plans, and other data.

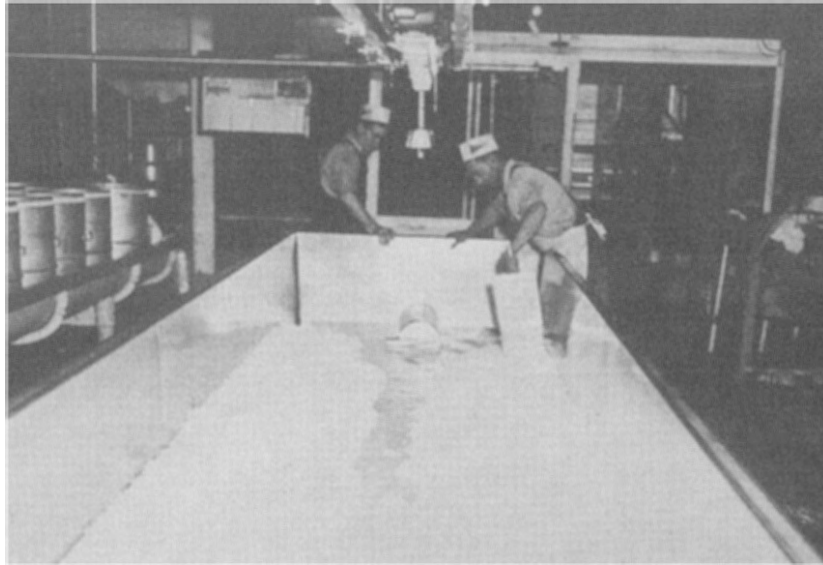
MANUFACTURING MILK SERIES



Milk being received at a cheese factory. Trucks pick up milk daily at the farms. In hot summer weather cans should be protected from the heat by a cover.



14.3 million pounds of cheese were processed in Oklahoma cheese factories in 1946. This factory receives about 70,000 pounds of milk per day for cheese making.

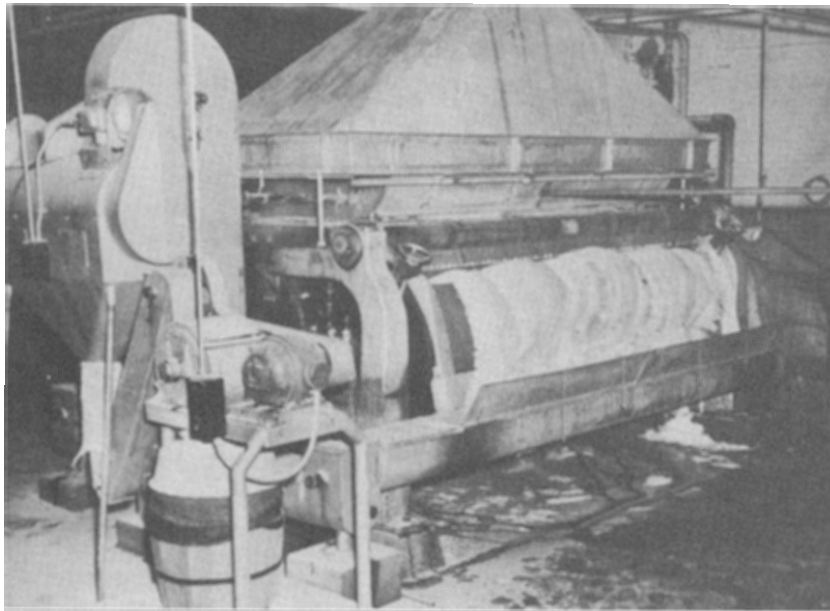


Removing the Whey. The curd is separated from the whey by the application of heat after the addition of rennet in the milk. The whey is then drained off and the curd dried, placed in hoops, pressed and made into cheddar or other consumer packaged cheese.



Cheddar cheese—just off the press awaiting packaging and transporting to the processing plant where it will be aged, processed and placed in consumer packages. A large percent of Oklahoma cheese is bought by processing plants.

The use of milk classifications is much different than for other farm products, and a neighbor frequently asks, "Why do you stand for the dealer giving you a lower price for part of your milk when it is all alike?" The answer to this is clear when it is known that all manufactured milk products, which include the surplus from fluid uses, do not have the high value per sales unit as fluid milk. When the dealer receives a quantity of milk, he must use it within a certain time or it sours. He uses as much as possible at the high value uses and then pays accordingly for the manufactured products he makes from the balance.



The drying of skim milk and buttermilk for human food was greatly increased during the war period in Oklahoma. In the postwar period much dry skim milk will go to bakeries and other commercial users. Lower grades go to feed mixers.

Table II-a shows the general manufacturing uses of milk placed on the market by producers in Oklahoma by five-year periods since 1920, and Chart II-a in the appendix shows the various uses of milk from 1930 to 1945 for the United States. In studying this table and chart, the reader will note that there has been a steady change in the products manufactured. Farm butter production has dropped; other manufactured products as cheese, condensed milk, ice cream, dry skim powder, and casein have increased. Commercial butter after a steady climb dropped after 1942. New manufacturing processes, nutritional standards, and competition with other foods have brought about these changes.

Oklahoma farmers are now faced with lower priced manufacturing milk prices due to flush production, slowing down of exports and the sales from northern states within this state.

A survey of the weekly requirements of thirty-two Oklahoma bakeries in January 1947 showed 62,000 pounds of dairy products were used per week. The report also showed that twelve of these bakeries purchased exclusively from Oklahoma dairy plants, fourteen of them part of the time, and the other six were using out of state dairy products all the time during the week. Comments by Oklahoma bakeries on the question "What could be done to improve the acceptance of Oklahoma dairy products?" were answered as follows: "Make a better dry milk product"; "Every lot should be tested by a competent laboratory to meet bakery needs"; "Make more sweetened condensed milk". These are typical expressions.

These expressions point to some of the troubles in any new industry, namely, a better quality raw product and more attention to smoothing out processing and distribution "kinks". Dairy farmers have a stake in expanding this market outlet as usually the "home market" is the most profitable or easiest to hold due to smaller costs in selling and transportation.

In the months ahead these markets will be needed to replace the "war-period" export outlets.

Cream

Sixty-five thousand farmers sold cream for buttermaking in 1944, according to the United States Census. This is the last year of record for this figure. Approximately 36 percent of the



Butter plant of one of the larger companies operating in Oklahoma. Cream, eggs, and poultry are assembled through local produce stations and processed at plants like this one.

state dairy production was used in buttermaking in 1946. This segment of the industry needs more attention as butter is considered to have the widest outlet of all dairy products, and it is considered to be the last dairy product to have price difficulties with consumers. Butter is readily stored, shipped in either domestic or foreign commerce and is usually used on our tables three meals per day. Within recent years the supply has been small due to the great demand for fluid and manufactured milk. Not enough was made to supply the need. Some consumers turned to substitutes.

The challenge to producers is clear. More high quality butter must be offered consumers. With the coming of higher farm incomes and electricity to more farms, producers can afford to install equipment for proper caring for (1) milk and cream to be used on the farm, and (2) cream for sale which will mean higher cream prices and an improvement of the consumer acceptance of Oklahoma butter.

Processors generally are giving more attention to improve the quality of butter. In some areas the general pattern of assembling cream through cream stations is giving way to farm truck route collections as a means of securing high quality and fresher cream from the farmers. Where production is rather heavy, the plan seems to be successful and results in high quality butter. Cream station operators have been alerted to the urgent need for quality, and producers using this outlet are delivering better cream. Chicago butter markets have recently averaged 62.25 cents per pound for A (92 score) butter; while B (90 score) has averaged 60.25 cents and Grade C, 58.25 cents. With these differentials an eighty pound can of cream testing forty percent would net from 64 cents to \$1.28 more for the high quality cream. In many northern states farmers and processors alike are not satisfied unless they have AA (93 score) butter, which, on the present market, would bring 63.5 cents per pound.¹

As a Dairy Farmer, Which Products Should I Produce?

This is a question for the producer to answer for himself—just as he decides whether to raise Jerseys, Holsteins, or any other breed of dairy cattle.

Obviously, under conditions near a large fluid milk market the chances are that if the distributors of fluid milk need more milk, this would be the best market for the farmer who is (1) on a dependable road and (2) has facilities and interest in producing a high quality milk which meets the city's requirements.

Another dairymen in the same area may want to sell milk to the local cheese factory. If he is on a dependable road for

¹ Daily Market Report June 11, 1947 (Dairy and Poultry Products, United States Department of Agriculture, Production and Marketing Administration, Dairy and Poultry Market News Service, 623 South Wabash Avenue, Chicago, Illinois. (This daily report is available upon request.)

daily delivery by truck and wants to qualify with high quality milk, he should figure closer than the fluid milk man as his price will be lower per pound butterfat and he has to pay the hauling. If he is a diversified farmer, the skim milk may be worth more to him as a pig and chicken feed than he can get at the cheese plant. In this case he may desire to sell cream. Cream is delivered two to three times per week. The weighty skim milk is kept on the farm for hog, calf, and poultry feeding.

There is a definite place for all three types of dairymen. The problem is for them to be efficient in all their farming operations and to market a high quality product. It is my prediction that there is little future for low grade dairy products. Consumers are quality conscious.

A visit to neighboring dairy farms and to processing plants will assist producers materially in improving their production and marketing practices.

Industry Problems

Dairying is one of the most complex industries — from producing — through the processing — and use. In Oklahoma we have practically all segments of the industry as has been pointed out in the foregoing paragraphs and tables. It is truly a big industry — 77 million dollars in 1946.

It starts with the raw product as produced and delivered to some processing plant by the farmer or a truck driver who picks it up at the farm. Producers are faced with the problems of extreme temperatures, rains, dust, and road conditions in delivering the quality of raw products needed to make quality products.

The demand and trend have been for milk. Is the producer warranted in making permanent improvements for milk? Or, will cream pay him best in the future?

These and other questions can best be studied and the solutions worked out through industry activities. The following outline is offered as a suggested basis for this use.

(A) Producer groups interested in dairying, through their own organizations, should establish more efficient programs for the production and marketing of dairy products.

(B) The industry, through its trade organizations, as processors and distributors of milk, ice cream, and manufactured dairy products, might disseminate more information adapted to the local production, marketing, and consumption problems.

(C) Dairy Councils, Parent-Teachers, Chambers of Commerce, civic clubs, hotel and restaurant operators, bakers, and other groups of consumers can assist in several ways in the understanding of the importance of milk products in the diet. Medical groups can supply valuable local and state data.

Summary

and a

Suggested Procedure in an Educational Program

1. Producers should keep in mind the relationship between per capita consumer's income and the consumption of dairy products as briefly pointed out in the circular.

2. Milk and cream prices are some above parity prices. Government support prices at 90 percent of parity are provided for under present legislation until December 31, 1949.

3. As there are many uses for and grades of milk and cream, which vary in prices, producers are urged to keep themselves well informed on market demands for each.

4. Producers should become more informed on the pricing, grading, and testing of fluid and manufacturing milk so as to "more easily" meet the buyer's needs throughout the year.

5. The improvement of the quality of both the producer's milk (and cream) and the processed product are the most important problems before the industry. Information and demonstrations to secure the improvements of both of these should be carried out in each market.

6. Elimination of duplications, waste, and inefficiency in assembling processing, and distribution of dairy products. This problem in each market affects producers, handlers, and consumers; and improvements may vary under local conditions.

7. Producer, industry and consumer groups should assist, in an active way, on city and state levels in working out programs for more efficient production, distribution and increased use of all dairy products.

8. Educational problems in each county can be assisted materially by information prepared and assistance of specialists of the Oklahoma Extension Service. County agents and home demonstration agents in each county can assist with local programs and demonstrations.



Appendix

Table I-a.

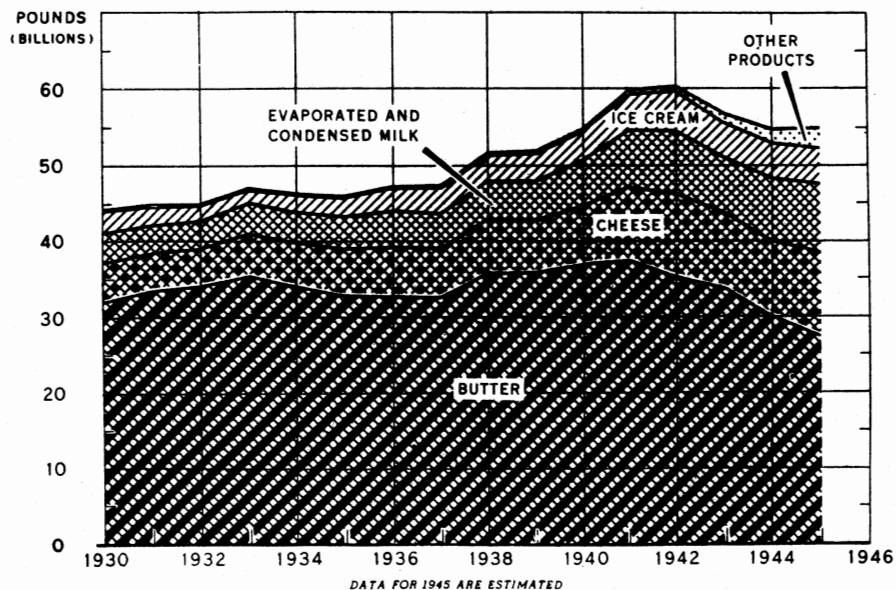
OKLAHOMA: CASH INCOME FROM DAIRY PRODUCTS AND PERCENTAGE OF TOTAL STATE INCOME BY FIVE YEAR PERIODS 1910 to 1945, Inc. and 1946

Year	Cash Income (000)	Percent Dairy Income is of total state Income
1925.....	18.6	5.4
1930.....	26.0	14.2
1935.....	20.8	13.1
1940.....	23.0	12.2
1945.....	53.0	12.3
1946.....	55.3	11.1

Source: Income parity for Agriculture, Section 17, Dairy Products, Bureau of Agriculture Economics, September 1943. Cash Receipts from Farming, 1924-1944. Bureau of Agricultural Economics, January 1946.

CHART II-A

WHOLE MILK EQUIVALENT OF MANUFACTURED DAIRY PRODUCTS, UNITED STATES, 1930-45



Milk used in manufactured milk increased from 44.5 billion pounds in 1930 to 60 billion pounds in 1942. About 5 billion pounds less was used in 1945 than in 1942.

CHART I-A

Statistical Flow-Sheet of Milk For U. S. 1943 Figures

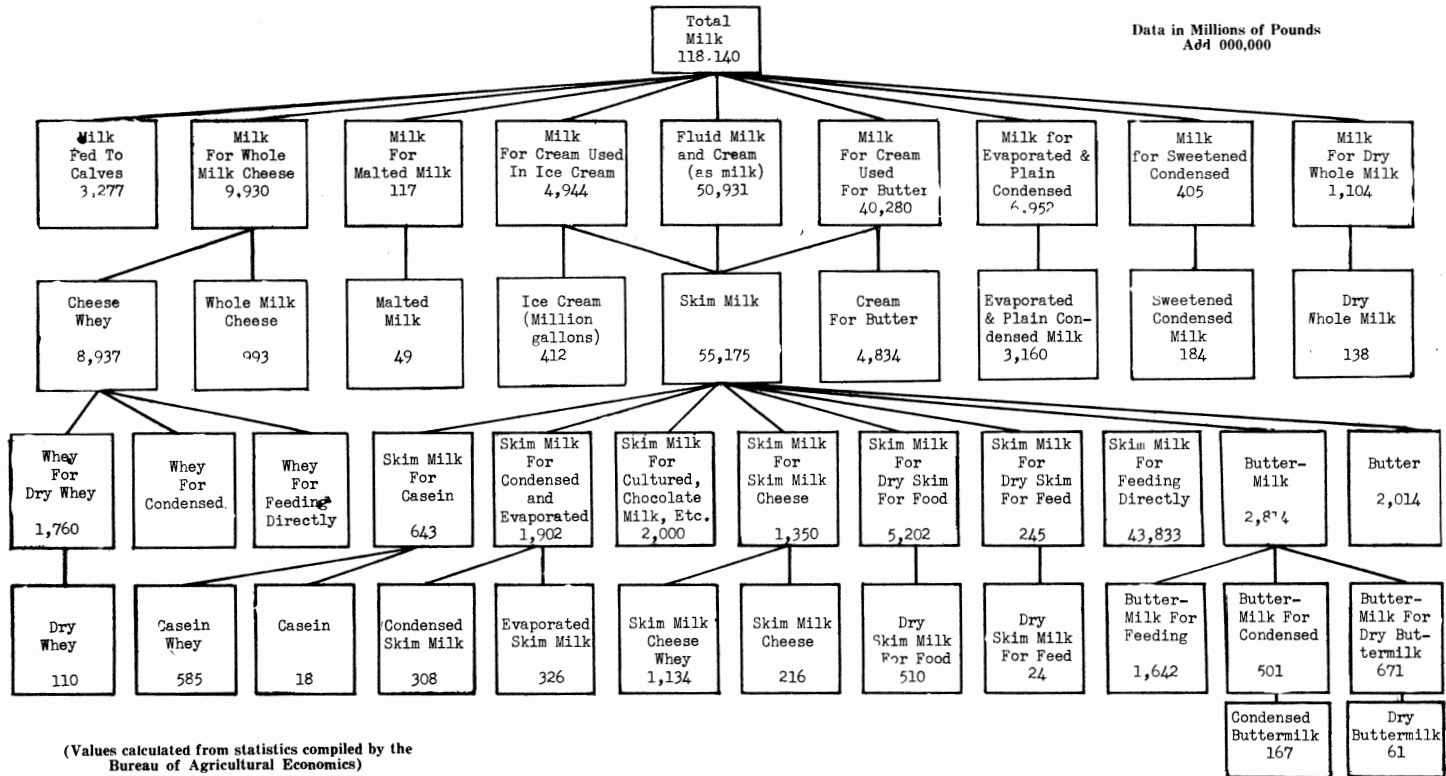


Table II-a.

**OKLAHOMA—TOTAL MILK PRODUCED AND MANUFACTURED DAIRY PRODUCTS BY
FIVE YEAR PERIODS—1920 to 1945 and 1946**

Years	Total Milk Produced	Creamery Butter	Farm Butter	All Cheese	Condensed Milk	Dried Skimmed Milk	Dried Butter- Ice Cream & Sherbet	Casein	Cottage & Baker Cheese
	Million Pounds	1000 Pounds	1000 Pounds	1000 Pounds	1000 Pounds	1000 Pounds	1000 Pounds	1000 Gallons	1000 Pounds
1910	828 ¹	4,111	27,056 ²	-----	-----	-----	-----	-----	-----
1920	1,086 ³	9,596	22,215	8 ⁴	-----	-----	-----	1,811	-----
1925	1,810	15,821	25,000	5 ⁵	713 ⁶	-----	-----	2,654	-----
1930	2,217	24,654	21,300	415	-----	-----	821	2,686	166
1935	2,275	38,674	22,400	6,467	373	29	1,221	2,475	505
1940	2,380	51,151	13,500	11,054	2,855	352	1,655	3,645	312
1945	2,709	44,952	10,400	15,776	-----	-----	-----	5,786	304
1946	2,400	37,029	-----	14,330 ⁷	-----	-----	-----	-----	-----

¹ Figures for 1919.² Figures for 1909.³ United States Census.⁴ Figures for 1919.⁵ Figures for 1926.⁶ Figures for 1923.⁷ Estimate yearly total of monthly reports 1946.

Source: Production of Manufactured Dairy Products.
Farm Production, disposition and Income from milk.
Dairy Statistics.

Table III-a.

MONTHLY PRODUCTION OF MANUFACTURED DAIRY PRODUCTS IN 1944

Commodities	Number Plants	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total
		1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.	1000 Lbs.
Butter	68	2,814	3,068	3,531	4,240	6,467	5,575	4,953	4,628	3,636	2,847	2,625	2,468	46,800
Cheddar Cheese	19	478	709	998	1,423	2,017	1,696	1,721	1,563	1,207	866	880	792	14,300
Cottage	27	113	131	163	198	258	219	204	187	161	136	142	122	2,000
Sweetened Condensed Skim Milk	5	....	....	35	261	342	271	265	173	16	3	....	32	1,300
Sweetened Condensed Whole Milk ¹ .....	....	....	....	6	5	18	43	11	6	....	....	....	....	89
Plain Condensed Skim Milk ¹	279	242	220	125	88	107	179	167	264	301	245	232	2,400	
Spray Process Non-fat Dry Milk Solids ¹	167	221	166	177	232	148	131	150	103	91	150	123	1,800	
Roller Process Non-fat Dry Milk Solids (Human Cons.) ¹ ..	5	....	27	83	137	293	254	239	160	75	32	64	38	1,400
Dry Skim Milk for Animal Feed ¹ .....	....	....	1	....	7	23	16	68	34	38	35	....	....	222
Dry Casein ¹	5	14	17	12	14	7	8	7	7	7	3	3	2	99
Dry Buttermilk	11	83	109	134	145	234	176	154	164	137	116	127	106	1,600
Ice Cream Total Gallons.....	142	238	262	316	396	588	773	825	719	541	427	338	227	5,600
Sherbet	48	13	37	48	51	59	62	63	88	55	50	46	25	597

¹ Less than five plants reporting.

Source: Production of Manufactured Dairy Products—1944.

Cooperative Extension Work in Agriculture and
Home Economics, Extension Service, Oklahoma
A. & M. College, and U. S. Department of
Agriculture Cooperating, Acts of Congress of
May 8 and June 30, 1914.