UNIVERSITY OF IDAHO
AGRICULTURAL EXPERIMENT STATION

Departments of Dairy Husbandry and Agricultural Economics

IDAHO AGRICULTURE

The DAIRY SITUATION IN IDAHO

Being Part II of

A Tentative Report of the Agricultural Situation Based on An Economic Survey of the Production and Marketing of Idaho Farm Products

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ERRATA, BULLETIN 152

Table 11, page 26: the southwest district produced 25,962,857 gallons of milk in 1924, not 5,962,857.

Page 13, Table 14. Title should read: Dairy cows per 1,000, not 100 people.

Page 51, Table 23. Dates above columns should be in following order: 1919, 1920, 1921, 1922; data is arranged in correct order. The following half of the table is omitted:

TABLE 23 (Continued)

1923 *			1924 *			1925 *			1925 **			1926 **		
Manufactured product (pounds)	Milk equivalent (pounds)	(%)	Manufactured product (pounds)	Milk equivalent (pounds)	(%)	Manufactured product (pounds)	Milk equivalent (pounds)	(%)	Manufactured product (pounds)	Milk equivalent (pounds)	(%)	Manufactured product (pounds)	Milk equivalent (pounds)	(%)
9,883	207,543	69.7	13,431	282,051	71.0	15,101	317,121	76.0	18,841	395,661	76.5	20,238	424,998	79.5
5,316	53,160	17.8	7,670	76,700	19.5	7,243	72,430	17.4	9,172	91,720	17.7	8,103	81,030	15.1
13,668	33,270	11.1	11,365	28,412	7.2	8,956	22,440	5.5	10,040	25,100	4.8	9,367	23,418	4.4
271	3,726	1.4	341	4,688	1.4	360	4,950	1.1	382	5,253	1.0	374	5,143	1.0
(Gals.)			(Gals.)			(Gals.)			(Gals.)			(Gals.)		
Total	297,699	100.0		391,851	100.0		416,945	100.0		517,734	100.0		534,589	100.0

* As reported by the Bureau of Agricultural Economics, U. S. D. A.

** As reported by the Bureau of Dairying, Idaho State Department of Agriculture.

Summary

Dairying affords an effective method of marketing Idaho's large surplus of cheap feeds in a condensed form having high unit value. The other usual advantages such as more complete utilization of labor thruout the year, a constant source of income, the maintenance of soil fertility, etc., also apply to dairying in Idaho.

The importance of the industry is shown by the fact that in 1925 dairy cows represented 17.5 percent of all animal units in Idaho. Census reports show that in 1924 the value of all dairy products produced in the state was more than $9,000,000.00, which amounted to one-sixth of the value of all agricultural products except hay.

Something of the national situation is indicated by the fact that per capita consumption of dairy products increased between 25 and 35 percent while the population of the United States increased 17 percent.

The number of dairy cows in Idaho increased from 118,000 in 1920 to 163,000 in 1926, an increase of 38 percent. During the same period the number in the United States increased 4 percent, the number in the Pacific states 14 percent and the number in the mountain states 21 percent. The United States, Pacific states, mountain states, and Idaho in 1926 had the following respective numbers of dairy cows per thousand people: 192, 165, 219, and 316. Idaho had 34.7 percent more cows per thousand people than the United States average in 1920 while in 1926 Idaho had 64.6 percent more than the United States.

Total milk production in Idaho advanced from approximately 52 million gallons in 1919 to about 79 million gallons in 1924, an increase of about 50 percent.

Average production per cow increased from 153 pounds of fat per year in 1919 to 178 pounds in 1924.

In 1925 the southwest district had about one-third of all dairy cows in the state, the south central district about 25 percent, the Upper Snake River district about 17 percent, southeast Idaho 13 percent, north Idaho-Lemhi County district 7 percent, and the Palouse district 6 percent. District expansion in the dairy industry since 1920 has been in about the same relative order and the number of heifers being kept for milk indicates that the near-future expansion will be in about the same order.

The large production of alfalfa hay in the irrigated sections of Idaho

together with no export trade due to the quarantine against the alfalfa weevil, caused a great surplus of hay with low market value. This situation together with the favorable prices of dairy products compared to other agricultural products and the general depression in agriculture, has been largely responsible for the great expansion of dairying in Idaho since 1920.

Idaho produces a large surplus of dairy products. Of the total butterfat produced, 69 percent is used for manufacturing while only 47 percent of the butterfat produced in the United States is used for manufacturing purposes, (farm butter in manufactured products). Of the milk converted into commercially manufactured products (not including farm butter) in 1926, 80 percent was made into butter, 15 percent into cheese, 4 percent into condensed milk and 1 percent into ice cream. The volume of each of the above mentioned products with the exception of condensed milk has increased each year during the past six years. Butter production is requiring a larger proportion of the total milk, and cheese is maintaining about the same proportion of the total.

The percentage of farm butter is being reduced rapidly. In 1924 only 21.4 percent of the butter was made on the farm. Nearly all butter exported goes to the California markets and Los Angeles gets the bulk of it.

Cheese production has increased very rapidly in recent years, more than four times as much cheese being produced in 1926 as in 1920. Most of the cheese exported goes to California markets.

The rapid growth in population of the Pacific coast states, especially California, together with the trends of production of the various dairy products in each of the western states indicates that an increasing by large percentage of California's milk production is being diverted into market milk channels and that the adjoining mountain states are furnishing an increasing amount of the butter and cheese. The mountain states have the advantage of differential in freight rates over eastern producing areas. However, should the movement of butter and cheese become eastward instead of westward due to a change in market conditions, Idaho would not be severely handicapped since shipping cost per pound of butter is only 1.4 cents higher from Caldwell, Idaho, to Chicago than to Los Angeles. It is evident that all development of dairying in the mountain states centers largely around population and production trends in California.

THE DAIRY SITUATION IN IDAHO

By

F. W. ATKESON, dairy husbandman; D. L. FOURT, field dairyman; and GEORGE L. SULERUD, assistant agricultural economist; B. H. CRITCHFIELD, agricultural economist.*

INTRODUCTION

The plan of farming in Idaho, especially on the larger irrigated projects, necessitates the inclusion of considerable livestock. Approximately one-half of the crop acreage for the state as a whole is devoted to forage and feed crops, while in counties where the larger irrigated tracts are located, the area in alfalfa, other tame hay, and feed and forage crops frequently amounts to 60 or 70 percent of the total cropped acreage. Leguminous crops and cultivated forage crops are very necessary for maintaining the soil fertility requisite to large cash crop yields. Some of the feed crops are produced cheaply because they utilize land and labor of the farmer and his family at times when the latter are not required for major farm enterprises.

Dairying affords a most effective way of marketing the large surpluses of feed on Idaho's irrigated farms. Shipment of the feed crops themselves is almost prohibited by their bulk and by the expense of transporting them to markets in regions where there is a deficit. Quarantines against alfalfa hay have virtually blocked all shipments out of Idaho. Dairy products are in a highly concentrated form and have a high value per unit of product. The freight rate from Boise to Kansas City on hay is 75 cents per hundred pounds and on butter it is $2.36 per hundred pounds. Valuing butter at 40 cents per pound the freight charge on $1000.00 worth of butter from Boise to Kansas City would be $59.00 while the freight charge on $1000.00 worth of hay valued at $15.00 a ton would be $1000.00. The freight charge on the butter per $1000.00 worth of product would be only 5.9 percent of the cost of shipping hay.

On most farms there is sufficient available labor to care for the dairy cows necessary to consume the surplus hay and feed grown without interfering to any great extent with the major cash crops. This is true especially when the dairy herd is managed to provide for winter dairying and for light milking requirements during the harvest period.

Studies of the management of farms on several of the larger irrigated projects in Idaho covering the past 10 to 15 years indicate that the more permanent farm operators have used dairy cows along with poultry to utilize home grown feeds, while the less stable operators kept fewer cows,

*Mr. Critchfield represented the Bureau of Agricultural Economics, U. S. Department of Agriculture, in this study. The writers wish to acknowledge the services of Prof. M. R. Lewis, agricultural engineer of the Idaho Agricultural Experiment Station, in preparing the drawings used in this bulletin.

chickens, and other livestock, and evidently followed the practice of selling hay and feed to a greater extent.

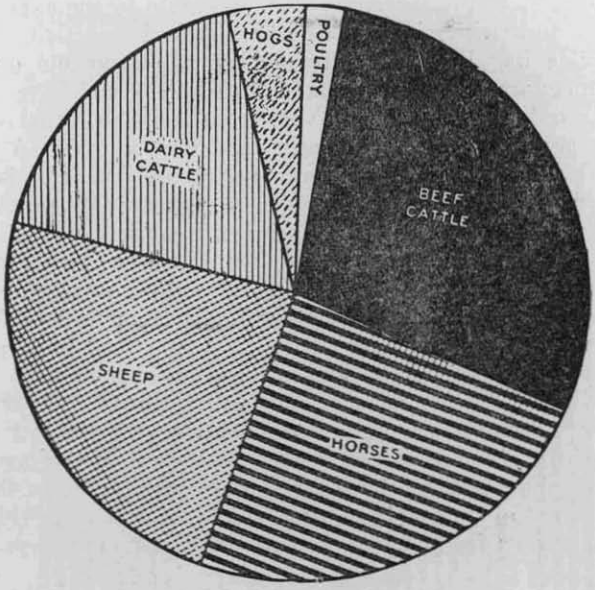
Conditions in Idaho for dairying are equal in many respects to those in other established dairy sections of the United States and in some ways are superior.

Importance of Dairying in Idaho

According to the 1925 agricultural census, the value of dairy products produced in Idaho during 1924 was $9,110,184.00, which was one-sixth of the value of all agricultural products except hay.* On January 1, 1925, there were in Idaho 237,000 dairy cattle, of which number there were 139,400 dairy cows over two years of age, according to the 1925 agricultural census.

Figure 1 shows the relative importance of dairy cattle and other livestock in Idaho. This chart is based upon estimates of the number of different classes of livestock on January 1, 1926, and upon computations of feed requirements. It should be considered as an approximation of the relative importance of the dairy cattle, sheep, beef cattle and other livestock of the state from the standpoint of feed and forage needs.

FIGURE 1



*Hay was not included because it is fed to livestock, and by including it there would be duplication.

The percentage of animal units* represented by each type of livestock is as follows:

Dairy cattle	17.5
Beef cattle	29.0
Sheep	23.5
Horses	23.7
Hogs	4.2
Poultry	2.1
All livestock	100.0

*One animal unit is equivalent to one horse, one cow, five hogs, seven sheep, 100 poultry.

The National and State Situation

Idaho produces a surplus of dairy products. Therefore, cognizance must be taken of the national and regional situation in the dairy industry. Both the present status of dairying and the outlook as indicated by trends in the industry must be considered.

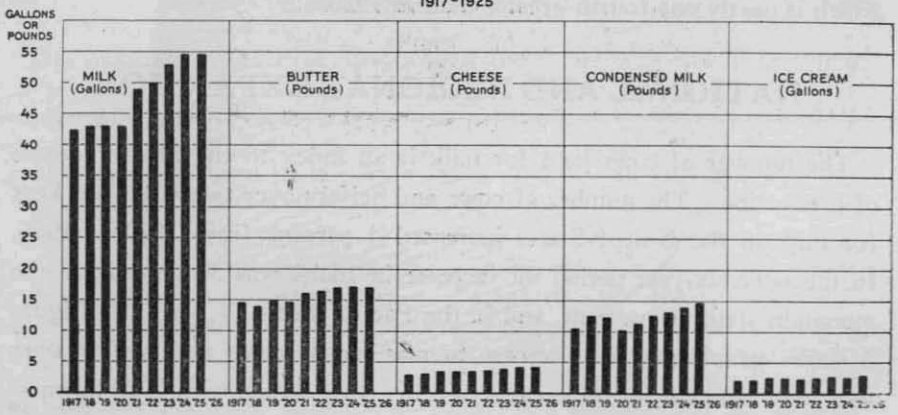
Per Capita Consumption

The use of dairy products in the United States has been increasing at a very rapid rate. Milk production in the United States increased from 75 billion pounds in 1914 to 117 billion pounds in 1925, or more than 50 percent. Population increased about 17 percent during the past 10 years, while during the same period per capita consumption increased between 25 and 35 percent.

The following graph and table show the per capita consumption by products for the years 1917 to 1925, and also the average by periods.

FIGURE II

PER CAPITA CONSUMPTION OF DAIRY PRODUCTS IN THE UNITED STATES
1917-1925



1926 in Idaho, while for the United States there was only 87 percent as many heifers of this age being kept for milk in 1926 as there was in 1920. (See Figure 4).

FIGURE IV

HEIFERS, ONE TO TWO YEARS OLD. BEING KEPT FOR MILK

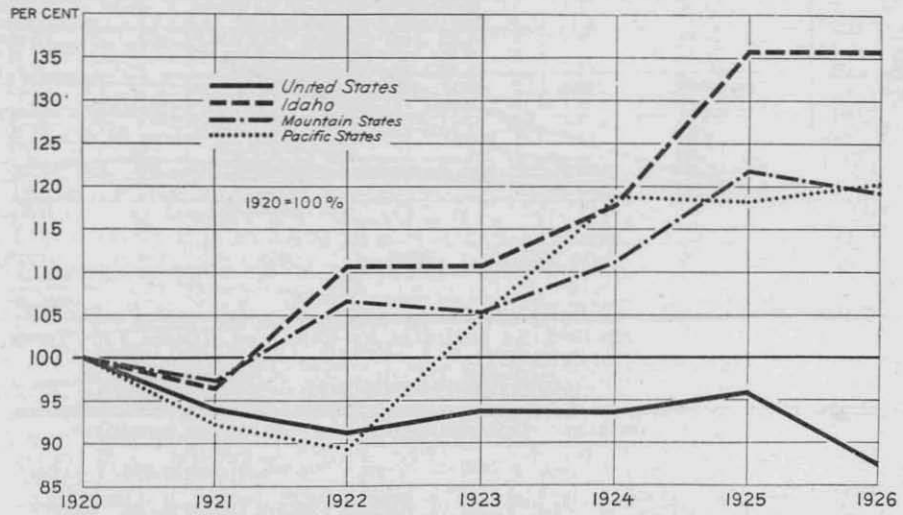


TABLE 3—Heifers One or Two Years Old Being Kept for Milk*
(ooo omitted)

Year	United States	Pacific	Mountain states	Idaho
Actual numbers.				
1920	4,418	207	151	28
1921	4,153	191	147	27
1922	4,033	185	161	31
1923	4,147	217	159	31
1924	4,137	246	168	33
1925	4,234	245	185	38
1926	3,861	249	180	38
Percentage changes each year over 1920.				
1920	100.0	100.0	100.0	100.0
1921	94.0	92.2	97.3	96.4
1922	91.3	89.3	106.6	110.7
1923	93.8	104.8	105.3	110.7
1924	93.6	118.8	111.2	117.8
1925	95.8	118.3	121.8	135.7
1926	87.4	120.3	119.2	135.7

*Estimated number of farms, January, 1920—January, 1926. Table compiled from reports of the Bureau of Census and division of crop livestock estimates.

The comparative rate of increase in the number of people and the number of dairy cows is another indication of the trend of the industry. Figure 5 shows the actual number of dairy cows per thousand people in

the United States, Pacific states, mountain states, and Idaho from 1920 to 1926. Table 4 gives the data from which this chart was made. It also gives the yearly percentage comparisons of the above mentioned divisions with the United States as a whole.

FIGURE V

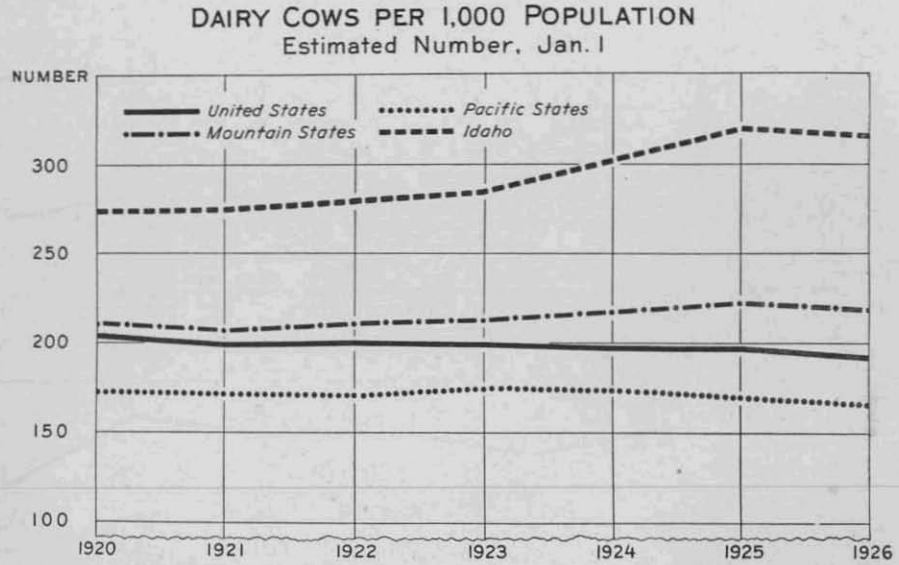


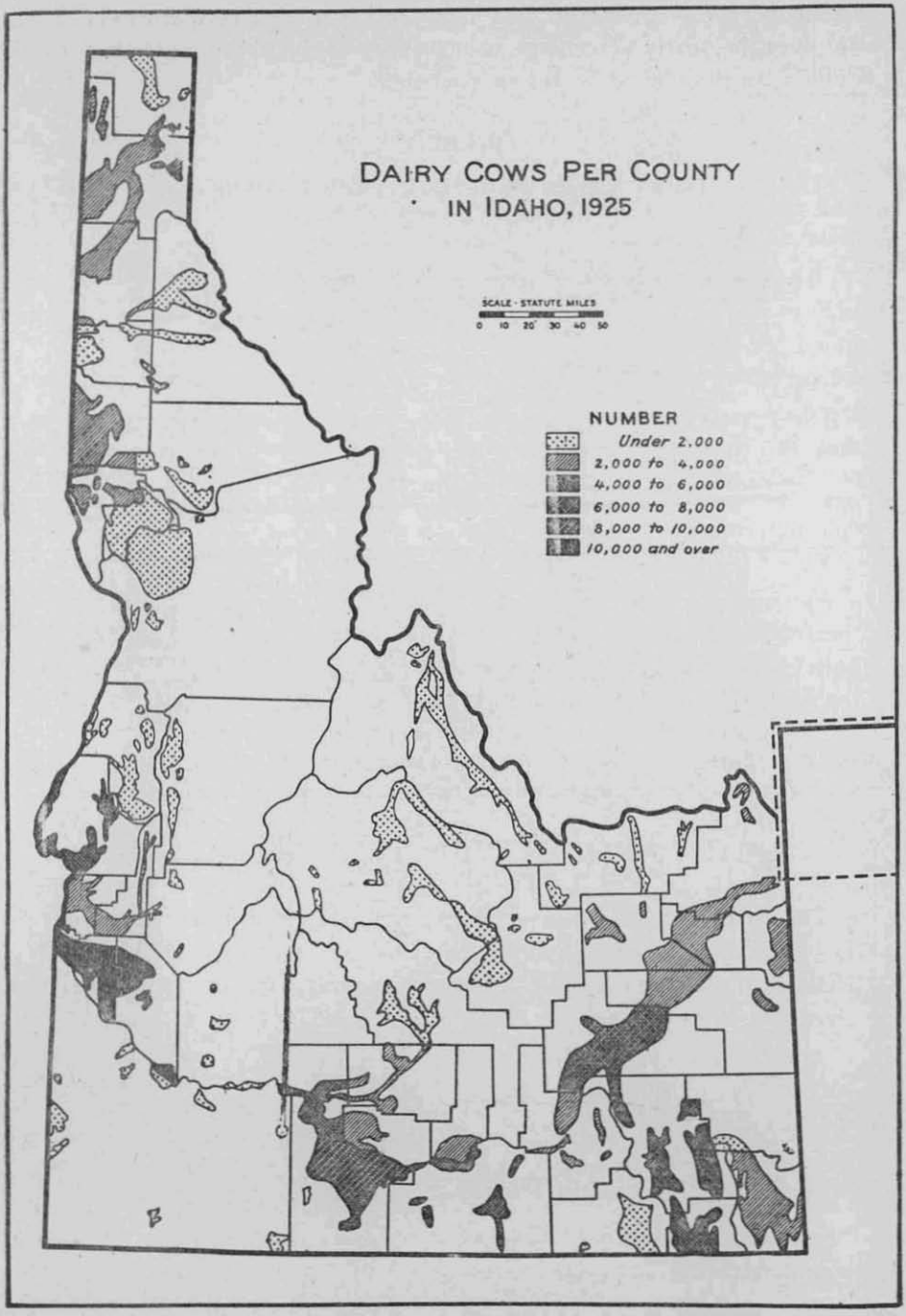
TABLE 4—Dairy Cows Per 100 People, 1920-1926*

Year	United States	Pacific States	Mountain States	Idaho
1920	203	172	210	273
1921	199	171	206	274
1922	200	170	210	279
1923	199	174	212	284
1924	197	173	217	302
1925	197	169	222	319
1926	192	165	219	316
Yearly percentage comparisons with United States.				
1920	100.0	84.7	103.4	134.7
1921	100.0	85.9	103.5	137.7
1922	100.0	85.0	105.0	139.5
1923	100.0	87.4	106.5	142.7
1924	100.0	87.8	110.1	153.3
1925	100.0	85.8	112.7	161.9
1926	100.0	85.9	114.0	164.6

*Estimated number January 1, each year Compiled from Table 2 p. 15, in report of "Statistics of Dairy Industry with special reference to the Eleven Western States," Bureau of Agricultural Economics, U. S. D. A.

The Pacific states do not have as many dairy cows for their population as does the United States as a whole, while the mountain states have

FIGURE VI


DAIRY COWS PER COUNTY
IN IDAHO, 1925
SCALE - STATUTE MILES
0 10 20 30 40 50
NUMBER
Under 2,000
2,000 to 4,000
4,000 to 6,000
6,000 to 8,000
8,000 to 10,000
10,000 and over

a greater number in relation to population. Table 4 shows that the number of dairy cows per 1000 people in the United States decreased from 203 in 1920 to 197 in 1925, or a decrease of 5.41 percent. In Idaho the number of cows per 1000 population has increased continuously. In 1920 there were 273 cows per 1,000 people as compared to 203 in the United States. This number increased until in 1925 there were 319 cows per 1,000 people in Idaho as compared to 197 cows per thousand in the United States. In other words, the increase in Idaho figured on this basis was 30.2 percent in the five years as compared to a decrease in the United States of 5.41 percent.

Cows per 1,000 people in the mountain states increased from 210 in 1920 to 222 in 1926, an increase of 10.6 percent. Cows in the Pacific states decreased from 172 per 1,000 people in 1920 to 165 in 1926, or 4.1 percent. Idaho has a still greater number than the mountain states.

The Pacific coast group of states as a whole is a "deficit" producing area for dairy products and the trend is not upward as far as cows per thousand people is concerned. This would suggest that the population of the Pacific states as a group is increasing more rapidly than dairying, and that Idaho and other mountain states have an opportunity to supply the dairy products necessary to make up the deficit.

As population increases in the Pacific states, a greater percentage of the total milk produced must be used as whole milk and more of the butter and cheese supply must be secured from the mountain states and the Middlewest. It is evident that the Pacific states are going to furnish an increasingly greater market for dairy products if present trends continue.

DAIRY PRODUCTION TRENDS IN IDAHO

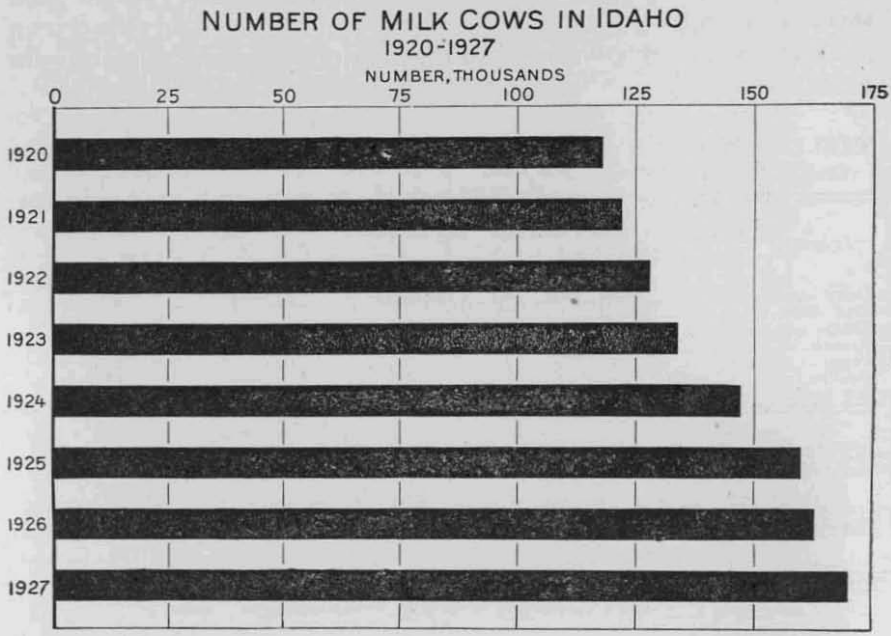
The dairy cattle of Idaho are concentrated in the more intensified farming areas, particularly in the older well-established irrigated districts. Relative numbers of dairy cattle in the various sections of the state are shown in Figure 6.

The Boise, Payette, and Weiser valleys, the Twin Falls section, and parts of the Upper Snake and southeast Idaho districts are shown to be the most important dairy sections.

Growth of the Industry

Expansion in dairying has taken place very rapidly in Idaho, especially during the past six years.

FIG. VII



The number of dairy cows in Idaho by years from 1920 to 1927 follows:

1920	118,000
1921	122,000
1922	128,000
1923	134,000
1924	147,000
1925	160,000
1926	163,000
1927	170,000

(as reported January 1, each year).

The 1910 census shows 86,000 "milk" cows in Idaho. This figure, however, represents cows milked rather than dairy cows. If it were possible to deduct the very common cows milked for short periods, it is probable that the number of "dairy" cows in Idaho would be found to have doubled between 1910 and 1920. The change in the plan of listing dairy cows, as such, was not made until 1920 and it is difficult to secure figures that are comparable. Dairying in Idaho, based on numbers of dairy cows, increased about 44 percent between 1920 and 1927.

The rapid expansion of dairying in Idaho is further indicated by the average number of cows per farm as at census periods. In 1910 there

were 2.26 dairy cows per farm; in 1920 there were 2.74 and in 1925 there were 3.42.

Table 5 shows the relative increase in dairy cattle in proportion to other kinds of livestock.

TABLE 5—Percentage of Total Animal Units in Each Class of Livestock in Idaho, by Census Years*

Industry	1910	1920	1925
	Percent of total animal units	Percent of total animal units	Percent of total animal units
Dairy cattle	11.1	13.3	17.5
Beef cattle	25.5	29.8	29.0
Sheep	39.4	27.3	23.5
Horses	19.6	24.7	23.7
Hogs	3.2	3.4	4.2
Poultry	1.2	1.5	2.1
All livestock	100.0	100.0	100.0

*One animal unit equivalent: 1 horse, 1 cow, 5 hogs, 7 sheep, 100 poultry. (Material computed from U. S. census reports.

The above data show that dairy cattle increased from 11.1 percent of the total animal units in 1910 to 17.5 percent of the total in 1925.

Value of Dairy Products

The value of dairy products and the tremendously increasing importance of this industry in Idaho is shown by the following chart.

FIGURE VIII

VALUE OF DAIRY PRODUCTS AND ALL CROPS EXCEPT HAY IN IDAHO

Census Years, 1909, 1919, and 1924

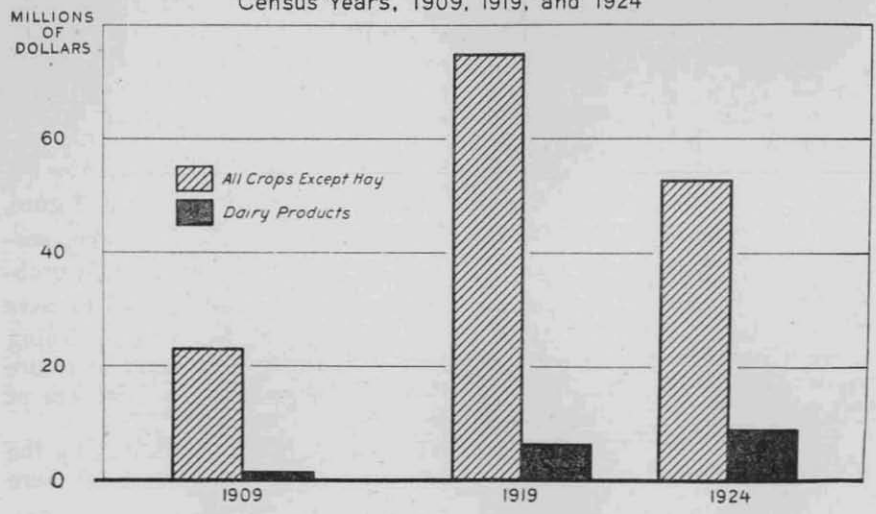


TABLE 6—Value of Dairy Products and Crops in Idaho*

Census year	Value of all crops except hay	Value of dairy products
1909	$23,257,888	$1,379,390
1919	75,094,000	6,368,269
1924	52,917,000	9,110,184

*Bureau of census reports.

In the case of dairy products figures given do not include the amount consumed on farms where produced, whereas figures on crop values include the total value of crops produced, except hay.

Total Milk Production

The foregoing figures do not give a complete picture of the development of dairying in Idaho. Values are not a good comparison because of changing price levels and the unit value of product. The number of cows does not indicate any changes in the efficiency of dairying due to better care and improved stock.

Milk production increased at a much more rapid rate than did the number of cows during the last three census periods. The increase in milk production from 1919 to 1924 is shown by census years in the following figure and table.

FIGURE IX

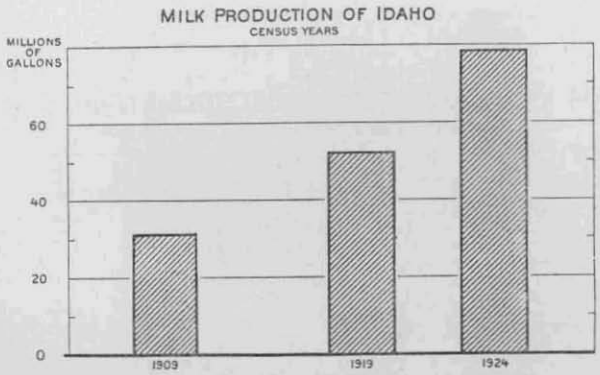


TABLE 7—Total Milk Produced in Idaho, by Census Years*

Census year	Gallons of milk produced
1909	30,981,341
1919	52,365,498
1924	78,505,003
Increase, 1919 over 1909	143 per cent
Increase, 1924 over 1919	50 per cent
Increase, 1924 over 1909	253 per cent

*U. S. census reports.

The milk produced in 1924 is the equivalent of about 27 million pounds of butterfat as compared with a production of 11 million pounds in 1909.

In Average Production Per Cow

The preceding tables show that the total production of milk in Idaho has increased more rapidly than has the number of cows. This is due to the increase in average production per cow as shown in the following table:

TABLE 8—Total Milk Production, Number of Cows, and Average Production Per Cow in Idaho* 1889-1924.

Year	Number of dairy cows	Average production per cow per year			
		Milk (gallons)	Milk (pounds)	Butterfat** (pounds)	Percentage increase ach period over previous period
1889	27,278	186	1,600	64	56
1899	51,929	291	2,503	100	56
1909	69,628	359	3,087	123	23
1919	115,336	414	3,560	142	15
1924	151,722	517	4,446	178	25

*Figures taken from Bureau of Census reports
**Computed by estimating milk to average 4 percent butterfat.

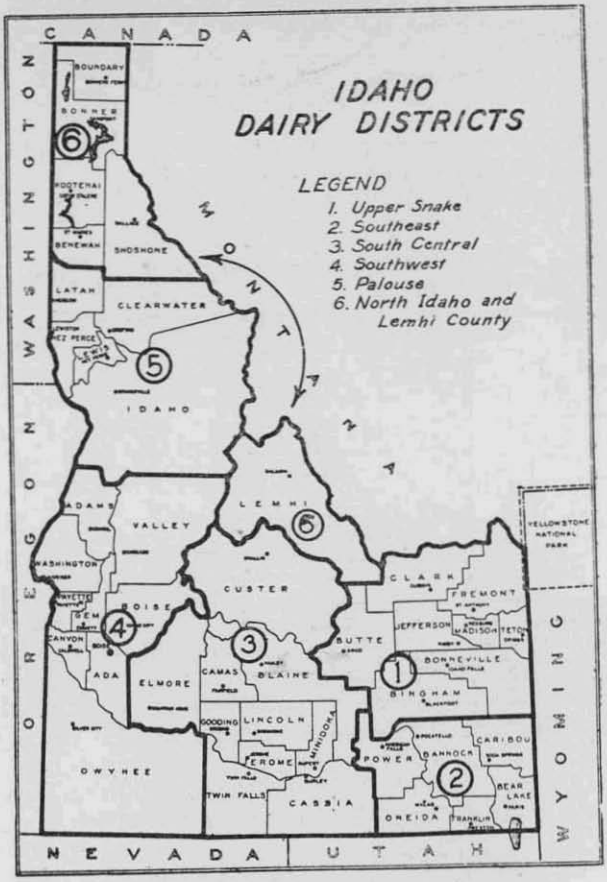
The above table shows an increase of 542 pounds of milk and 22 pounds of butterfat in the last five years, or a gain of 11.3 percent. This is remarkable. Some idea of its importance may be obtained in the fact that the cows in 1924 produced over 3,000,000 additional pounds (3,344,000 Lbs.) of butterfat due to the increased production per cow. The average production per cow in the United States in 1909 was 362 gallons and in 1919 it was 366 gallons. (The 1924 figures for the United States are not yet available). In comparing Idaho with the United States as a whole, it is found that the state has a higher average production per cow and is increasing average production per cow more rapidly.

The large increase in production per cow is undoubtedly due to the increased use of high quality sires, the change from beef type to dairy type cows, the importation of good quality dairy cows, and to improved methods of feeding and management.

PRODUCTION TRENDS BY DISTRICTS

In order to facilitate the study of changes and some of the factors influencing the changes in dairying in different sections of Idaho, the state has been divided into geographical districts. Figure 10 shows the districts divided by heavy lines.

FIGURE X



These districts are (1) the Upper Snake River group of counties including Butte County, (2) Southeast Idaho counties including Bannock, of which Pocatello is the county seat, (3) South central Idaho, which includes the north and south Twin Falls and the Minidoka projects as well as several counties to the north, (4) Southwest Idaho counties where the Boise, Payette, and Weiser valleys are the important farming sections, (5) the Palouse section which includes the rainfall areas of west central Idaho, and (6) the "cut-over" district of north Idaho. Lemhi County is considered alone or included in the latter section in the discussion that follows. These divisions have been made on a rather arbitrary geographical basis for convenience in study.

TABLE 9—Number of Milk Cows in Idaho by Counties, Ranked According to Importance*

County	Number of cows milked	Per cent of beef type	County	Number of cows milked	Per cent of beef type	County	Number of cows milked	Per cent of beef type
1. Canyon	14,216	1.70	16. Fremont	2,744	11.91	31. Lewis	1,394	25.63
2. Ada	12,580	3.44	17. Teton	2,700	3.11	32. Oneida	1,208	46.80
3. Twin Falls	9,809	2.95	18. Madison	2,694	9.78	33. Blaine	957	35.51
4. Bannock	6,182	5.81	19. Bonner	2,615	5.56	34. Boundary	869	4.81
5. Bingham	6,103	1.77	20. Bear Lake	2,574	18.46	35. Benewah	812	29.93
6. Gooding	5,162	1.45	21. Gem	2,400	15.34	36. Custer	811	50.06
7. Cassia	4,978	10.86	22. Nez Perce	2,191	5.56	37. Caribou	790	19.05
8. Franklin	4,759	2.01	23. Latah	2,112	41.91	38. Butte	761	39.17
9. Washington	4,088	13.07	24. Lincoln	2,038	2.72	39. Camas	757	38.50
10. Jerome	3,747	.61	25. Power	2,022	2.74	40. Clearwater	700	32.62
11. Minidoka	3,692	.44	26. Valley	1,968	5.33	41. Elmore	637	42.68
12. Bonneville	3,297	33.39	27. Idaho	1,894	58.79	42. Shoshone	481	5.87
13. Jefferson	3,118	11.04	28. Owyhee	1,888	16.68	43. Boise	308	56.12
14. Kootenai	3,100	5.34	29. Lemhi	1,567	3.69	44. Clark	293	69.15
15. Payette	3,100	1.49	30. Adams	1,330	36.33			

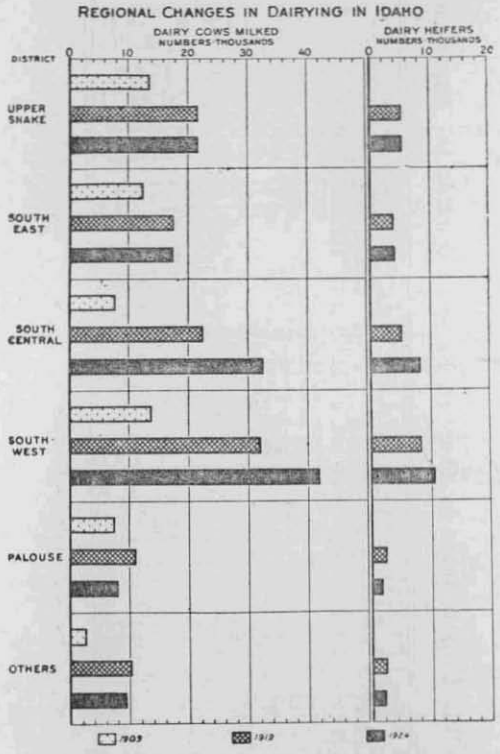
* 1924 agricultural census report for Idaho, January 1, 1925.

Number of Dairy Cows

Table 9 gives the number of milk cows in each county of the state, according to census reports, with the counties ranked according to number of cows:

Figure 11 shows the number of dairy cows in each district for each of the past three census years: 1910, 1920, and 1925. The data are given in the accompanying table.

FIGURE XI



There was an increase in the number of dairy cows in all districts of the state during the past 15-year period, but the rate of increase was greater in some districts than in others and only three districts have increased at an equal or greater rate than the state as a whole. Field observations would indicate that much of this increase came in the latter part of this period, the time of depression in prices of agricultural products following the World war. The dependability of dairying as a source of income and the fact that prices of dairy products did not drop as much as prices of many other products, awakened a great interest

TABLE 9a—Number of Dairy Cows Milked and Dairy Heifers Kept for Milk by Districts, 1910-1925*

Districts	Year	Dairy cows milked	Per cent 1920 to 1925 change,	Dairy heifers kept for milk	Per cent change, 1920 to 1925
Upper Snake	1910	13,741			
	1920	21,720		5,380	
	1925	21,730	0	5,498	2.2
Southeast	1910	12,580			
	1920	17,639		3,933	
	1925	17,535	—0.6	4,140	2.2
South central	1910	7,779			
	1920	22,512		5,272	
	1925	32,508	0	8,351	58.4
Southwest	1910	13,828			
	1920	31,976		8,388	
	1925	41,878	40.0	10,644	26.9
Palouse	1910	7,458			
	1920	11,143		2,322	
	1925	8,191	—26.5	1,614	—30.5
North Idaho and Lemhi	1910	2,707			
	1920	10,346		2,321	
	1925	9,444	—8.7	2,171	—6.4
STATE	1910	58,093			
	1920	115,336		27,616	
	1925	131,295	13.9	32,418	17.4

* Computed from federal census data.

in dairying. With the adjustment of prices of many cash crops during the period from 1920 to 1925 there was a less rapid increase in dairying in most districts and an actual reduction in some, such as the Palouse, which is a great wheat-growing section. It is apparent that most of the expansion in the past 15 years has taken place in the districts best suited to dairying.

Probably the outstanding reasons for greater increase in the south central and southwest districts are superior climatic and feed conditions, together with an absence of outstanding competing cash crop enterprises. More efficient marketing facilities also are present in these sections and relatively higher prices for dairy products prevail. The marked increase in north Idaho and Lemhi County is probably due to an increased demand for dairy products in the mining and lumber districts, and in the Spokane trade area as the population of Spokane and its mining and lumber sections has increased. Another reason for the increase in dairying in northern Idaho is due to the efforts of the county agricultural agents in encouraging the production of alfalfa and clover which provide winter feed for dairy cows. Up until a few years ago dariying in northern Idaho was more or less a summer business.

A decrease during the period 1919 to 1924 of 3000 dairy cows milked, is found in the Palouse counties, due, undoubtedly, to lack of interest in dairying during the recent periods of relatively high returns from wheat farming in this section.

Dairy Heifers Kept for Milk

An analysis of the number of dairy heifers kept for milk January 1, 1920 and 1925, indicates that there was an increase in numbers of 4800, or 17.4 percent, in Idaho. (Table 9a). There were decreases, however, in the Palouse and north Idaho Lemhi districts. The Palouse district showed a decrease of about 700 heifers or 30.5 percent and the other district 150 heifers or 6.4 percent during this period. Increases in the rest of the state were as follows: South central, 58.4 percent; southwest 26.9 percent; the Upper Snake and the southeast each 2.2 percent. (See Figure 11 and Table 9a for the number of dairy heifers kept for milk in each district by census years.)

Sales From Farms

Table 10 shows the sales of butterfat, milk and cream from farms in Idaho by districts, computed on a basis of pounds of butterfat which the products contained. Figure 12 shows the total sales of dairy products sold from the farm expressed in terms of total butterfat by census years.

FIGURE XII

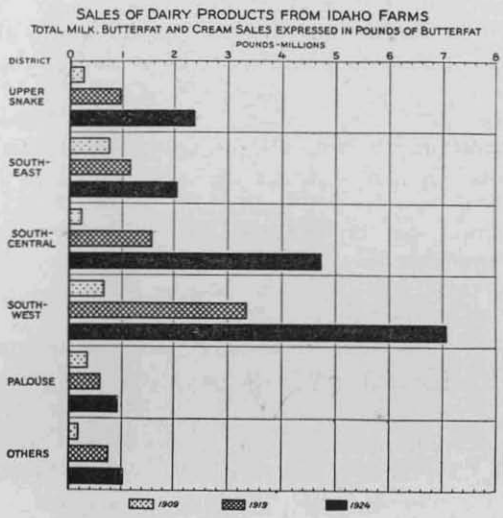


TABLE 10—Sales of Dairy Products from Idaho Farms Expressed as Pounds of Butterfat, for Census Years 1909,1919, and 1924, by Districts (1)

Counties	1909	1919	1924
Upper Snake District			
Butterfat sold (lbs.)	118,718	564,801	1,904,798
Milk sold (lbs. butterfat)	47,676	108,240	350,696
Cream sold (lbs. butterfat)	86,780	304,838	126,672
Total butterfat (lbs.)	253,174	977,879	2,382,166
Southeast District			
Butterfat sold (lbs.)	419,398	651,936	1,784,925
Milk sold (lbs. butterfat)	66,645	105,735	116,868
Cream sold (lbs. butterfat)	259,078	401,484	147,618
Total butterfat (lbs.)	745,112	1,159,155	2,049,411
South Central District			
Butterfat sold (lbs.)	113,332	1,107,121	4,189,138
Milk sold (lbs. butterfat)	88,381	238,980	487,989
Cream sold (lbs. butterfat)	15,198	235,972	55,310
Total butterfat (lbs.)	216,861	1,582,073	4,732,437
Southwest District			
Butterfat sold (lbs.)	331,238	1,847,573	5,475,166
Milk sold (lbs. butterfat)	88,331	238,980	487,989
Cream sold (lbs. butterfat)	158,708	365,584	234,148
Total butterfat (lbs.)	657,056	3,354,615	7,075,847
Palouse District			
Butterfat sold (lbs.)	184,053	407,400	653,940
Milk sold (lbs. butterfat)	51,617	68,951	101,627
Cream sold (lbs. butterfat)	109,104	115,256	166,270
Total butterfat (lbs.)	344,774	591,607	921,837
North Idaho and Lemhi			
Butterfat sold (lbs.)	25,137	382,981	508,709
Milk sold (lbs. butterfat)	134,587	236,843	310,056
Cream sold (lbs. butterfat)	12,216	137,486	216,590
Total butterfat (lbs.)	171,940	757,310	1,035,355

(1) Computed from federal census reports.

Figure 12 indicates the changing importance of the different districts in milk sold from farms for the past three census years. Farms of the southwest district in 1919 and 1924 furnished nearly half of the milk sold as such.

Figure 13 shows the shifting in importance of different districts in the sales of butterfat as reported in the federal census. Here again the changes in dairy practices are indicated. Th Upper Snake has increased its sales of butterfat in comparison to the entire state, although the relative number of cows did not increase at the same rate. It is evident that there has been a change in the type of cow kept for milk, more cows of dairy type and less common cows. The southwest counties make up the important district, producing nearly two-fifths of total butterfat sold, while the south central district produced well over one-fourth. It is evident that southeast Idaho has shifted from butterfat to whole milk production, due no doubt to the expansion of cheese making and proximity to condensaries.

The statistical appendix includes the sales of milk, butterfat, and cream by counties for the census years 1919 and 1924.

Production of Milk and Butterfat

The production of milk in Idaho in 1924 amounted to 79 million gallons, as compared with 52 million gallons in 1919, and 31 million gallons in 1909.

Figure 13 presents graphically the milk production in Idaho by districts. It shows that some districts are producing much more than others and that the larger producing areas are increasing their production more rapidly. (See Table 11).

FIGURE XIV

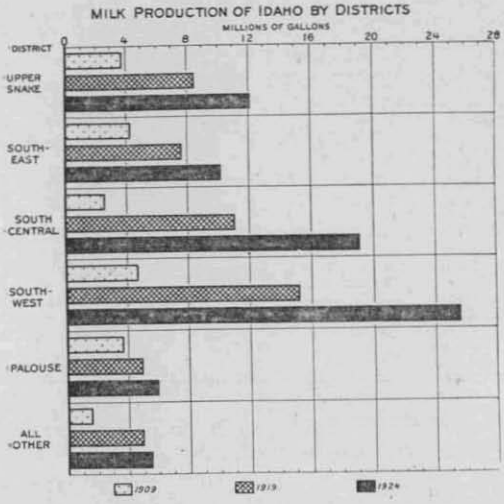


TABLE 11—Production of Milk (Gallons) and Butterfat Equivalent (Pounds) In Idaho, Census Years 1909, 1919, and 1924, by Districts (1)

Counties	1909[3]	1919[2]	1924[2]
Upper Snake District			
Milk (gallons)	3,708,152	8,489,990	12,115,499
Butterfat (pounds)	1,275,604	2,920,558	4,167,732
Southeast District			
Milk (gallons)	4,736,714	15,235,580	25,633
Butterfat (pounds)	1,466,761	2,639,305	3,500,301
South Central			
Milk (gallons)	2,571,469	11,084,889	19,114,001
Butterfat (pounds)	884,585	3,812,926	6,574,619
Southwest District			
Milk (gallons)	4,736,744	15,235,580	5,962,857
Butterfat (puonds)	1,629,438	5,241,039	8,818,047
Palouse District			
Milk (gallons)	3,716,287	4,058,990	5,962,319
Butterfat (pounds)	1,256,403	1,705,892	2,051,038
North Idaho and Lemhi			
Milk (gallons)	1,590,996	4,923,652	5,504,031
Butterfat (pounds)	547,303	1,692,736	1,893,043
State			
Milk (gallons)	20,861,072	52,365,498	78,505,003
Butterfat (pounds)	7,062,094	18,012,456	27,005,781

(1) Computed from federal census reports.

(2) Includes estimates for incomplete reports.

(3) Does not include estimates for incomplete reports. When estimates for incomplete reports are included, the state total milk production for 1909 becomes 30,981,341 gallons, or about 50 percent larger than the estimate as reported. The county estimates for incomplete reports in 1909 have not been made.

Canyon County ranked highest in 1924 in gallons of milk produced, this county alone producing more than 10 percent of the state's milk. Ada County produced nearly as much, while Twin Falls County produced about 7 percent of the state total. The statistical appendix includes milk production by counties for the census years 1909, 1919, and 1924.

Changes in Production Per Cow

Since the production has increased in some districts faster than the number of cows, it is evident that the districts vary in average production per cow. The average production per cow and the percentage of the cows milked that were beef type is shown in the following table:

TABLE 12—Average Production Per Cow by Districts and Percentage of Beef Cows of Total Milked (Census Year 1924) (1)

District	Average production			Beef cows—per cent of total milked
	Milk (gallons)	Milk (pounds)	Butterfat (pounds)	
State average	517	4,446	178	13.2
Southwest	526	4,524	181	7.6
South central	524	4,506	180	12.2
Southeast	498	4,283	171	11.9
Upper Snake	475	4,095	164	15.4
Palouse	440	3,784	151	41.2
North Idaho and Lemhi	381	3,277	131	13.2

(1) From United States census of agriculture, 1925.

The greatest percentage increase in production per cow was in the Upper Snake district. In the 15-year period 1909 to 1924, production per cow increased 49 percent, but from 1909 to 1919 the increase was only 11 percent. The greater increase came between 1919 and 1924, more than 30 percent.

The south central district made the next largest increase. 46.3 percent in the 15-year period. The greatest increase in this section was during the 10-year period 1909 to 1919, when an increase of 23.3 percent occurred. The increase was only 18.8 percent between 1919 and 1924.

The percentage increase in production per cow was almost as high in the southeast district, 44.7 percent from 1909 to 1924. The increase from 1919 to 1924 was 29.7 percent, and from 1909 to 1919 only 11.6 percent.

Percentage increase in production per cow in the other districts follows: North Idaho, 33.2 percent; the southwest district, 28.3 percent; and the Palouse district 16.4 percent.

These figures show that the highest average production per cow is found in those areas best adapted to dairying, considering feed conditions, climate, competing crops, etc. Some of the newer dairy districts have made more rapid progress in increasing the average production per cow than the older, more established dairy sections, due partially to the change from cows of beef type to cows of dairy breeds. The more highly developed dairy districts, where expansion has been taking place rapidly, also have the smallest percentage of beef cows among the total

number milked. The large percentage of beef cows milked in the Palouse area indicates lack of permanent dairying due to competing cash crops like wheat. The percentage of beef cows milked in North Idaho and Lemhi County is much smaller than in the Palouse region, indicating greater interest in dairy farming but also indicating, by lower production, poorer feed conditions.

FACTORS IN IDAHO

Quality of Cows

We find in Table 13, page 28 that the average production per cow varies in different sections of the state. This has considerable bearing on the future development of dairying in certain regions in Idaho, because the higher the production within reasonable limits, the greater the profit, feed and other conditions being the same. The economy of high production per cow is shown in the following table.

TABLE 13—Relation of Production Per Cow to Profit and Economy of Production

Number of cows	Class (lbs. butterfat)	Pounds of milk average	Pounds of butterfat average	Value of product	Cost of roughage	Cost of grain	Total feed cost	Value of product above feed cost	Feed cost, per lb. butterfat
10	below 74	2,881	68	$ 50.80	$35.90	$ 5.50	$ 41.40	$ 9.40	60.8c
75	125-174	3,857	155	66.79	42.19	5.72	47.91	18.88	30.9c
221	175-224	5,092	202	85.95	43.49	7.13	50.62	35.33	25.0c
343	225-274	6,320	251	106.79	43.53	9.43	52.96	53.83	21.1c
499	275-324	7,304	299	127.76	46.05	14.35	60.40	67.36	20.2c
415	325-374	8,491	349	148.40	37.73	20.10	67.83	80.57	19.4c
268	375-424	9,731	397	170.87	47.86	24.43	72.28	98.57	18.2c
124	425-474	10,534	445	190.95	50.20	31.26	81.46	109.49	18.8c
43	475-524	11,533	492	214.32	49.14	35.05	84.19	130.53	17.1c
22	525-574	13,849	548	236.95	51.09	45.91	97.00	139.95	17.70c
13	above 575	15,267	631	274.15	46.23	62.77	109.00	165.15	17.2c
2033	Average	7,719	315	$134.76	$46.11	$16.99	$ 63.10	$ 71.76	20.0c

The records represented in the above table were obtained from 10 cow testing associations located in the irrigated sections of southern Idaho. The reports covered the years 1923 to 1925. The average feed cost per pound of butterfat for the 2,033 cows was 20 cents and the feed cost per hundred pounds of milk was 82 cents. The average value of butterfat during the period was 43 cents per pound and of milk $1.75 per hundredweight. Forty-five percent of the cows fall within the production limits of 275 to 374 pounds of butterfat. Altho feed cost increases while production gains, the profit over feed cost increases much more rapidly. Feed cost per pound of butterfat decreases as production increases. The interest of farmers in dairying is generally indicated

by the profits derived from the industry. It is obvious that the higher the production per cow within reasonable limits, the more economical will be the production and the greater the interest in expansion of the industry.

It is evident from Table 12, Page 33, that, in general, the districts in which most of the cows milked are of the dairy breeds, are higher in production than districts where a larger percentage of beef cows are being milked. This is in accord with the economy of high production shown in Table 13.

Cow Testing Associations

Success in dairying depends largely on keeping profitable cows. The cow testing association is the best organized method of determining the profits obtained from each cow in the herd. The milk and butterfat produced by each cow is determined, and the value of the product is subtracted from the cost of feeds to determine the margin above feed cost. Such records make it possible for the farmer to cull his herd intelligently by eliminating the unprofitable cows. This information is also a good guide in breeding up the herd as it enables raising heifer calves from the best cows.

The fact that average production of cows in cow testing associations in Idaho during the years 1924 and 1925 was 300 pounds of butterfat, while the average production for all cows in the state was 178 pounds, indicates that more herds should be in cow testing associations.

On January 1, 1925, only 1.85 percent of the cows being milked in the United States were in cow testing associations while in Idaho, 2.72 percent were under test. In 1925 Idaho ranked seventeenth in number of cows on test and thirty-sixth in total number of cows being milked.

The monthly report for November, 1926, shows that there were 3,147 cows in Idaho representing 323 herds on test. There were nine associations operated by 12 test supervisors.

The first cow testing associations were organized in the south central and southwest districts, which have also made the greatest progress in dairy development. An example of improved efficiency in dairying due partially to cow testing association work, is the Weiser-Payette Association which reported an increase in average production per cow of 109 pounds of butterfat in three years of consecutive testing.

Cooperative Bull Associations

Altho cow testing associations point the way for immediate herd improvement by elimination of the poor producers, some steps must be taken toward improvement of future herds thru a better breeding program. This is best done through cooperative bull associations, which are groups of farmers organized for the purpose of joint ownership of three or more high class sires. At the end of each two years' service the bulls are exchanged. Such associations make possible ownership of

much better bulls at a minimum cost. The association extends the period of usefulness of each sire and tends to standardize the herds of the community on one breed.

Following the organization of a bull association there is greater interest in dairying, a more permanent program, and general improvement in the herds.

Idaho has made very rapid progress in this type of herd improvement during the past few years. On January 1, 1926, there were in this state 34 cooperative bull associations representing almost a thousand farmers owning 5,500 cows. Idaho ranked second among states in number of bull associations.

The Feed Situation

The available supply of good dairy cattle feeds such as forage, grain, pasture, etc., and their cost have considerable bearing not only on the profits of production but also on the advisability of expansion.

Forage Crops

The districts making the greatest development in dairying are those having the largest surplus of legume hays after the needs of horses kept for work and the wintering of beef cattle and sheep are met.

Of course, the comparative profit obtained from various types of livestock during any period will influence the percentages of forage used for each class of livestock. Legume hays are the basis of all good dairy rations and alfalfa is recognized as the best of the legumes. In Idaho alfalfa hay is, to a large extent, the basic feed in all livestock feeding. The following table compares the acreage and yield of alfalfa in the various districts with the animal units maintained and the percentage of total dairy cows.

TABLE 14—Acreage and Yield of Alfalfa by Districts Compared to Livestock Kept in District (1)

District	Alfalfa acreage		*Seven-year average yield of alfalfa per acre (tons)	Animal units		Dairy cows milked (percent)	Dairy heifers kept for milk (per cent)
	Total acres	Percent of state total		Number	Percent		
Southwest	168,139	23.3	3.64	243,734	24.21	31.9	32.8
South central	234,540	32.3	3.52	248,663	24.70	24.8	25.8
Upper Snake	166,809	23.0	2.96	214,802	21.34	16.5	16.9
Southeast	97,947	13.5	2.89	135,907	13.50	13.3	12.7
Palouse	35,018	4.8	1.84	95,122	9.45	6.2	5.0
North Idaho and Lemhi	21,280	2.9	2.58	68,504	6.80	7.2	6.7
State	724,733	100.0	3.09	1,006,732	100.00	100.0	100.0

(1) Data from the 1925 agricultural census, Bureau of Census.
* Average of years, 1918 to 1925, federal statistician for Idaho reports.

From the above table we note that in general the districts having highest yield per acre also have the greatest percentages of total state acreage. There also is close relationship between alfalfa acreage and yield and the percentage of total animal units. The percentage of total dairy cows and dairy heifers of the state kept in each district is also closely related to the yield and acreage of alfalfa. These figures indicate that most of the alfalfa is grown in sections best adapted to the crop and that alfalfa undoubtedly is an important factor in considering any change in the amount of livestock kept in a district.

Feed Prices in Idaho

Farm prices of feeds in different sections of the United States were compared to secure an indication of relative advantages for dairy production.

Monthly farm prices of specified feeds in California, Wisconsin, and Minnesota were secured from the crop reporting service of the United States Department of Agriculture and the five-year annual averages computed. Reclamation project records and state statisticians' figures in Idaho furnished farm prices for the same years in the Boise Valley and on the Twin Falls and Minidoka projects, where dairying is having its greatest development in Idaho. Table 15 gives prices of feeds for the different sections.

TABLE 15—Annual Average Prices of Specified Feed Crops—Wisconsin, Minnesota, California, and Typical Irrigated Sections of Idaho, 1921-1925*

Crop	Year	Irrigated sections of Idaho	California	Wisconsin	Minnesota
Corn (per bu.)	1921	$ .58	$ .92	$ .60	$ .41
	1922	.81	.94	.58	.47
	1923	.81	.98	.77	.65
	1924	.96	1.26	.94	.78
	1925	.84	1.35	1.03	.82
Five-year average	.....	.80	1.09	.75	.62
Oats (per bu.)	1921	.30	.58	.38	.27
	1922	.48	.56	.34	.28
	1923	.44	.52	.42	.33
	1924	.76	.94	.73	.61
	1925	.44	.72	.44	.37
Five-year average	.....	.45	.62	.42	.35
Barley (per bu.)	1921	.44	.61	.61	.43
	1922	.67	.65	.55	.42
	1923	.65	.72	.61	.46
	1924	.59	.71	.49	.41
	1925	.57	.87	.80	.65
Five-year average	.....	.62	.76	.66	.51
Hay (per ton)	1921	4.00	13.63	15.66	8.18
	1922	7.67	13.70	15.11	8.79
	1923	7.83	13.34	13.28	9.81
	1924	9.91	16.60	15.33	9.57
	1925	7.07	16.62	13.02	9.20
Five-year average	.....	7.30	14.78	14.48	9.11

* From *Weather, Crops and Markets,* and *Crops and Markets,* U. S. Department of Agriculture.

Prices on hay in Idaho sections are for "alfalfa" but in the three other states mentioned the quotation was on "loose hay". From a feeding standpoint, the Idaho hay should be equal and may be quite

superior to the loose hay quoted in the other states It was not possible to show satisfactory price data on alfalfa in all sections.

Inasmuch as alfalfa hay provides the major part of dairy feed in Idaho, the lower price of alfalfa in the state indicates advantages for dairying. Furthermore, there are times when alfalfa hay is so abundant that it cannot be disposed of except at a very low price.

Pastures

Idaho has a distinct advantage over many dairy producing sections because of the long pasture season in its irrigated districts. Records of cow testing associations indicate that the period on pasture for 1924 and 1925 ranged around six months to seven months.

TABLE 16—Length of Pasture Season in Idaho*

Name of cow-testing association	Year	No. farms represented	Mode	Average
Weiser-Payette	1925-1926	74	214	205
Canyon County	1925-1926	26	210	205
Ada County	1924-1925	23	213	
Gooding-Jerome	1925-1926	54	205 to 214	
Franklin County	1924-1925	27	185 to 190	
Bonneville County	1924-	15		

* From cow testing association reports.

By-Products

In several sections of the state there is annually a great tonnage of food by-products or waste products which can best be utilized by feeding to livestock. These products include such feeds as wet beet pulp from beet sugar factories; sugar beet tops during beet harvesting; beet molasses from the factories; cull potatoes, especially during years of low prices; bean and pea straw and cracked beans and peas in the bean and pea sections; apple pomace from vinegar factories; and waste products from vegetable canneries, such as fresh pea vines, sweet corn shucks, and ear butts.

These feeds are valuable for dairy cows and in the aggregate make up an enormous amount of low priced feed to be utilized. Those dairymen situated where a supply of such feed is available are able to reduce their production costs very materially.

Feeding Practices

Feeding practices for satisfactory milk production are more simple in the irrigated sections of Idaho than in most other dairy districts. Of all the hays, alfalfa is accorded first rank. It is more palatable, more efficient as a milk producer and yields more to the acre. In the irrigated sections alfalfa is the most common hay crop and the lowest in price, hence it is fed to the full capacity of the cows. It forms the basis of the dairy ration during the winter months. Since it is high in those elements

in which feeds are lacking, namely, protein and minerals, alfalfa hay alone makes an efficient ration for the average cow in southern Idaho, particularly as the hay is so cheap in comparison with other feeds. With high producing cows, that is, cows producing 300 pounds or more of butterfat yearly or an average of one pound a day, additional grain can be fed profitably. However, since cows under these conditions consume large quantities of alfalfa hay, the ratio of grain to milk can be 1 to 5 instead of the usual recommendation of 1 to 3 which applies in most dairy sections. It also is unnecessary to purchase expensive high protein feeds such as linseed oil meal. All feeds necessary for profitable production can be grown on the farm.

A comparison of average monthly farm prices of hay for the years 1921 to 1925 as discussed above shows the very favorable position of Idaho dairying from the standpoint of feed cost. (See Table 15).

A comparison of farm prices of corn, oats, and barley indicates that during the same years Minnesota dairy farmers enjoyed lower prices for concentrated feeds. Wisconsin prices have compared rather close by with Idaho prices, while California prices for concentrated dairy feeds have been appreciably higher. Inasmuch as alfalfa comprises the principal part of the feed for dairy cattle in Idaho and very little concentrated feed is purchased, it is apparent that Idaho dairymen are at little or no disadvantage from a feeding standpoint.

Pasture is considered the cheapest feed in most dairy districts. It furnishes a balanced ration at low cost and the cow does her own harvesting. In the irrigated sections of southern Idaho the pasture season is longer than in many other districts and the carrying capacity is much greater. In the non-irrigated sections of Idaho the feeding problems are similar to those in the dairy sections of the Middlewest. The limiting factors of expansion, especially in the cutover regions, are good pastures and alfalfa hay production. Until conditions are bettered a considerable amount of high protein feeds must be purchased. In these sections dairy production will consist largely of utilizing waste feeds and furnishing a better use for family labor.

Season for Freshening

There are several reasons why the season of freshening for dairy cows may influence profitable production. The majority of cows freshen in the spring when there is a surplus of dairy products and prices are low. Spring-freshening cows also demand more care during the busy farming season than fall-freshening cows.

A study of the annual reports of 10 cow testing associations in Idaho, representing 1,273 cows, was made to determine the most profitable time to have cows freshen. The results are shown in the following table:

TABLE 17—Effect of Season of Freshening* of Cows on Production, and Returns over Feed Cost

Number of cows	Season (months)	Pounds of milk	Pounds of fat	Value of product	Total cost of feed	Value of product above feed cost
381	December January February	8,131	338	$145.37	$67.97	$77.40
376	March April May	7,884	318	135.24	64.37	70.87
188	June July August	7,809	312	132.16	63.47	68.69
328	September October November	7,800	330	141.80	64.66	77.14
1,273	Average	7,925	326	$139.51	$65.39	$74.12

*Figures from cow testing association reports.

Cows that freshened in the winter and fall ranked higher in production than the spring and summer freshening cows. The feed cost per cow did not vary a great deal but the total value of products was greater for the winter and fall freshening cows, thereby giving a greater profit over feed cost for these seasons compared to spring and summer.

Fall and winter freshening cows will produce well during the winter and will have the advantage of spring grass right at a time when they are beginning to go down in production. The farmer has more time to care for his cows in the winter months and the cows will be dry during the late summer months when pasture conditions are not conducive to maximum production. In addition, the cows are competing to a minimum extent with field operations during the summer months.

Housing Dairy Cattle

In most of the leading dairy producing sections of the United States, due to climatic conditions, the investment in dairy barns is much greater than is necessary under southern Idaho conditions. The prevailing type of dairy barn in the Middlewest is a two-story stable with sufficient storage over the cattle for a winter's feed supply. The cattle are kept in the stable much of the time in winter, thereby requiring much labor in caring for them.

In the irrigated sections of Idaho, where alfalfa hay is abundant and very low in price, the prevailing practice is to stack hay outside all winter and feed it as needed. The low precipitation in this region during the winter months causes such little loss through spoiled hay that, considering the price of hay, it is not deemed advisable to go to the expense of putting it under cover. Most of the hay is fed outside in large racks and the cows are kept in open sheds except at milking time. These sheds are very cheaply constructed, in fact, many farmers use straw sheds. The milking barn is usually a shed type or very cheaply constructed

one-story barn. The investment in a convenient sanitary barn of this type is very low.

Under this system of stabling the cattle are under healthful conditions and are handled with a minimum amount of labor and a very low overhead expense for stables. This is a distinct advantage in dairy production for the Idaho farmer.

In the high altitude sections and in the Palouse and cut-over districts more expensive two-story barns are required because of the higher priced hay and great spoilage in the winter due to more moisture.

Disease Control

Idaho cattle are remarkably free from disease. The task of controlling and eradicating bovine tuberculosis in Idaho is entrusted to the director of the Idaho Bureau of Animal Industry and to the United States Bureau of Animal Industry. The task is being successfully accomplished through the united efforts of the above mentioned agencies, cooperating with livestock owners, veterinarians of the state, and county agricultural agents. Cattle from an area free from tuberculosis have a greater sale value than those from an infected district. Buyers of all classes of cattle are naturally attracted to sections of the state that are known to be relatively free from tuberculosis. Idaho now has six counties designated by the United States Department of Agriculture as modified tuberculosis-free areas. This designation means that all the cattle in those six counties were tested and the disease found to exist to an extent of less than one-half of 1 percent. Before the year is ended at least two more counties will be added to this list. Idaho has more accredited counties than any other western state. The present plan of tuberculosis eradication was started in 1919 and from that date until June 1, 1926, approximately 400,000 cattle were tested, this number representing 27,000 herds. Approximately 3,200 head were condemned. The average percent of tuberculosis in Idaho cattle as shown by tests carried on extensively in 15 counties is less than one-half of 1 percent. This low average compares well with other western states and is far below the average found in many eastern and central states.

Trend in Butterfat Prices

Another factor affecting expansion of the dairy industry in any district is the market price of butterfat. The prices of butterfat in Idaho have been very favorable compared to other products.

Average monthly and yearly farm prices for butter in Idaho are given in Table 18. The average yearly price, 1921 to 1925, was 40.6 cents per pound. Average monthly prices for the same period ranged from 35.6 cents in June to 45.2 cents in November. Prices have tended to drop from January to June, and then have risen again until November and December.

TABLE 18—Butter: Average Farm Prices Paid to Producers in Idaho, 15th of Month, 1916-1926 (1).
(cents per pound)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average yearly price*
1916	32	31	30	30	29	28	27	28	30	33	36	38	30
1917	36	36	38	39	37	37	37	40	46	44	48	49	40
1918	48	46	46	44	42	40	42	46	50	57	60	59	47
1919	58	52	50	53	54	51	51	54	56	62	64	67	53
1920	66	60	60	62	60	58	57	58	58	60	60	55	59
1921	47	44	42	42	35	29	32	38	42	44	44	42	39
1922	36	34	35	34	33	32	33	36	38	42	43	44	36
1923	44	43	42	42	42	40	41	44	46	45	46	46	43
1924	45	46	44	40	40	38	37	41	40	40	39	41	41
1925	42	41	37	41	40	39	43	47	46	51	54	52	44
1926	47	45	43	43	44	43	43	45	45	45	45	46	44
1921-1925 Average	42.8	40.2	40.0	39.8	38.0	35.6	37.2	41.4	42.4	44.4	45.2	45.0	40.6

(1) Data from federal Bureau of Agricultural Economcis, "Monthly Supplement to Crops and Markets."
* Weighted according to monthly movement of market.

Improved Market Facilities

The marketing system in Idaho as a whole has improved greatly in recent years. Formerly much of the cream was handled thru cream buying stations and shipped long distances to market, whereas now there are more and better manufacturing plants within the state and some transportation at least, has been eliminated and saved to producers. The successful creamery cooperatives in the state have also brought about keener competition for the farmer's product. It is estimated by the managers of some of the associations that cooperation among dairymen in certain districts of the state has meant a net return of several cents per pound more than under former conditions.

The trend in the prices of butter and butterfat serves as a good index for trend in prices of other dairy products. If the price of butter is out of line with the price of other dairy products more or less butter will be produced, depending upon whether the price is relatively high or low. This tendency will continue until prices are again in line.

It is not sufficient, however, to know merely what the price of butter in itself has been without regard to trends in prices of other farm products. One of the important reasons for the rapid growth of dairying in Idaho, as well as in many other states in recent years, is the fact that prices of dairy products since 1920 have on the whole been more favorable than prices of most other farm products. Figure 14 and Table 19 show the trends in the United States farm prices of butter, grains, meat animals and "all farm products." These prices are expressed in relative terms using the five-year period, August, 1909 to July, 1914, as the base, thus making it possible to compare the different groups. The all-farm products index includes a list of 30 important agricultural products. If an "all farm products" index number for Idaho were available it would no doubt be a more satisfactory one to use than the United States index; likewise, with the non-agricultural index. However, since no such indexes are available the United States farm prices and indexes are used. They will at least show the important relationships.

From 1916 to 1919 the all-farm products index was higher than the butter index but from 1920 onward it was lower. The grain index and meat animals index showed a similar relationship, except that the grain index was above the butter index from 1915 to 1920 and lower after 1920. In other words, the price of butter did not rise as rapidly during the war, nor did it drop as rapidly after the war, as did the price of other farm products. Butter has held a substantial lead over the all-farm products index up to the present time.

FIGURE 14

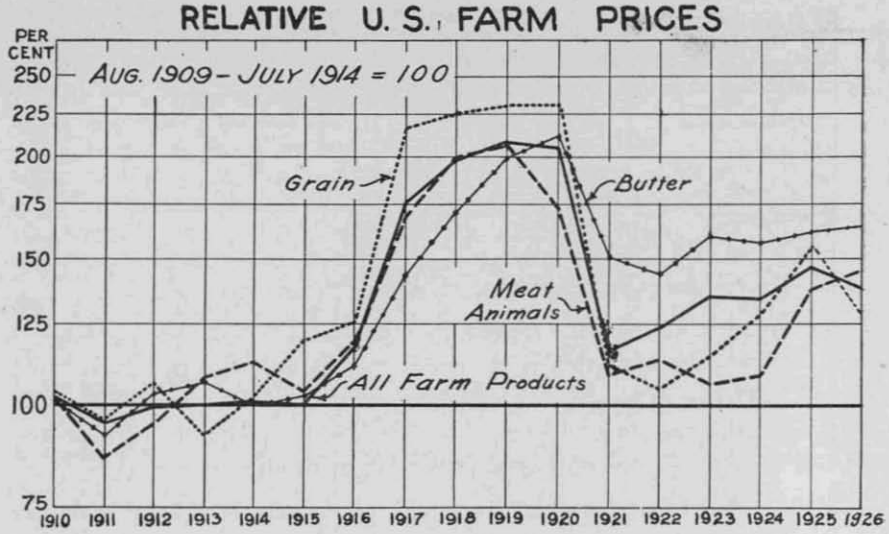


TABLE 19—Relative United States Farm Prices*
(Aug. 1909 to July, 1914—100) (1)

Year	Butter	Eggs	Grains	Meat animals	All farm products 30 items
Base prices ($)	.255	.215			
1910	102	105	104	103	106
1911	92	90	96	87	95
1912	103	102	106	95	99
1913	106	100	92	108	100
1914	100	105	103	112	102
1915	102	102	120	104	100
1916	112	116	126	120	117
1917	142	159	217	173	176
1918	171	186	226	202	200
1919	200	206	231	206	209
1920	214	222	231	173	205
1921	151	155	112	108	116
1922	140	133	105	113	124
1923	161	140	114	106	135
1924	157	141	129	109	134
1925	161	157	156	139	147
1926	163	146.5	129	146	136

*"Relative prices" are obtained by dividing the actual United States farm price of each commodity in a given year by the average United States farm price for the five year period (August, 1909—July, 1914) and multiplying by 100.

(1) United States Bureau of Agricultural Economics, "Index of Farm Prices."

Figure 15 and Table 20 show the relative purchasing power of the above mentioned groups of products, expressed in terms of non-agricultural commodities. The purchasing power of butter in terms of non-agricultural commodities remained below 100 percent until 1926, when it rose to 101 percent. Butter has remained at a higher level than the other groups for the last six years.

*Relative purchasing power is obtained by dividing the index number of each commodity or group by the index numbers of wholesale prices of non-agricultural commodities.

FIGURE XV

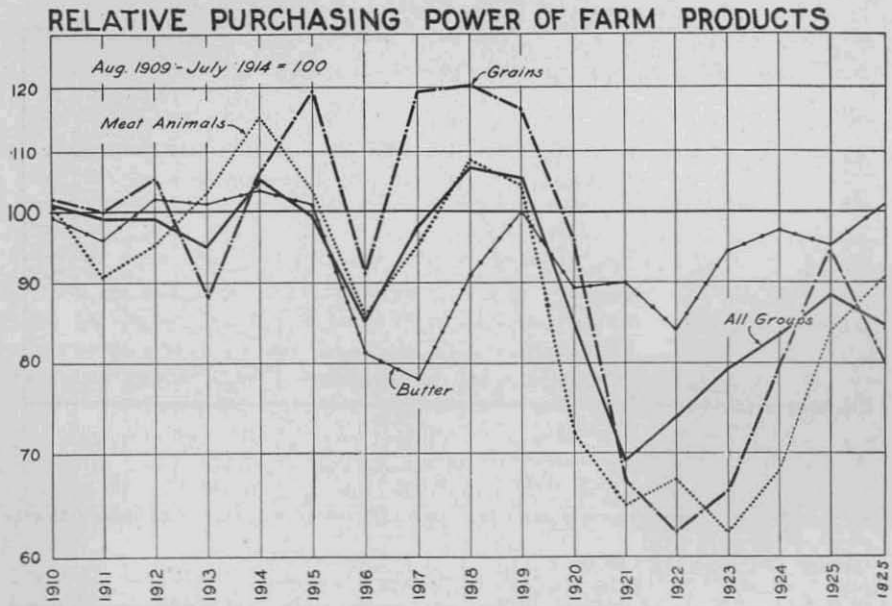


TABLE 23—Relative Purchasing Power of Farm Products (1)

Year	Grains	Meat animals	All groups	Butter
1910	102	101	101	99
1911	100	91	99	96
1912	105	95	99	102
1913	88	103	95	101
1914	106	115	105	103
1915	119	103	99	101
1916	91	86	85	81
1917	119	95	97	78
1918	121	108	107	91
1919	116	104	105	100
1920	96	72	85	89
1921	67	65	69	90
1922	62	67	74	84
1923	66	62	79	94
1924	80	68	83	97
1925	94	84	89	95
1926	80	91	85	101

(1) Bureau of Agricultural Economics (Index No. of Farm Prices).

The foregoing discussion brings out the fact that butter prices during the past six years have been favorable as compared with most other agricultural commodities. Butter prices still remain favorable and there appears to be little danger of serious price declines in the near future at least. Further slight decreases in number of dairy cows occurred in 1926 in the United States as a whole, and numbers of heifers are insufficient for normal replacements On the whole, the national dairy situation is as favorable as it was a year ago, if not more favorable.

THE OUTLOOK FOR DAIRYING

The National Outlook

The per capita consumption of dairy products in the United States has been increasing very rapidly. Population has increased about 17 percent during the past 10 years, and during the same period the per capita consumption increased between 25 and 35 percent. This is an important factor in the national situation and it indicates that the dairy industry is in a favorable position as far as demand is concerned.

Further slight decreases in numbers of dairy cows kept for milk occurred in 1926, and numbers of heifers are insufficient for normal replacements*. Present indications are that there were slightly fewer dairy cows on farms January 1, 1927, than a year earlier. There was no increase in the number of dairy heifers above the reduced numbers of a year before. Since the number of heifers is low in comparison with the number of cows and is insufficient for normal replacements, numbers of cows can be increased in 1927 and 1928 only by retaining in the herds older or less productive cows, including those not ordinarily kept for milk.

Foreign production and supplies of dairy products increased during 1926, but with the domestic tariff increased from 8 cents to 12 cents per pound in April, 1926, the total United States imports amounted to only 8,029,000 pounds, or less than one-half of 1 percent of total production.

The trend in the United States farm price of butter shows that butter prices have been gradually favorable as compared with prices of other farm products. Considering the demand and supply conditions it would seem that the national dairy situation is favorable for the near future.

The State Outlook

Dairying affords a most effective way of marketing Idaho's large feed surpluses in a highly concentrated form having high unit value.

A number of other conditions favor dairying in Idaho. The winters are mild with comparatively little precipitation, and a much lower investment in dairy farms is required than is necessary in some of the leading dairy producing sections of the United States. Idaho cattle are remarkably free from disease. The average percent of tuberculosis in the cattle of the state as shown by tests is less than one-half of 1 percent, which compares well with other western states and is far below the average found in many eastern and central states. Irrigated pastures in Idaho are superior to the pastures found in many dairy producing sectons. In the irrigated sections the pasture season is longer

* United States Department of Agriculture, Bureau of Agricultural Economics, "The Agricultural Outlook, 1927."

and the carrying capacity much greater than that found in many other districts.

Surveys in Idaho have shown that the system of farming in the irrigated sections requires a considerable acreage of alfalfa due to its adaptability, low production costs and small labor requirements. This crop also fits the section well because it makes for increased fertility of the soil, reflected later in specialized cash crops. The quarantine against the alfalfa weevil prevents export of alfalfa from southern Idaho. This, together with the large production causes low prices. However, even if the quarantine were removed alfalfa could not economically be shipped to distant markets because of its bulk and heavy carrying charges in proportion to unit value.

Idaho has made very rapid progress in cow testing associations and cooperative bull associations. In 1925 Idaho ranked thirty-sixth in total number of cows being milked, seventeenth in number of cows on test, and second among states in number of bull associations. The cow testing associations help to point the way toward immediate herd improvement by elimination of the poor producers; the cooperative bull associations contribute to improvement of the herds in the future by better breeding programs. Cooperative creamery development during the past few years has created more competition than existed formerly. In districts where cooperative creameries have been successful, farmers feel that the prices for butterfat have ranged higher than they do in districts where no such competition exists. A number of other large creameries have been established by private companies, so that at the present time manufacturing plants within the state are better able to take care of butterfat produced. Cream does not have to be shipped such long distances to market as in the past, thereby effecting an additional saving to producers.

Outlook in Idaho Districts

The Southwest Counties

In the southwest section of Idaho where dairy development is most advanced, sales of dairy products constitute a major part of the income on some farms, while hogs take the same place on others. Usually poultry and hogs on a very extensive scale do not combine well, as both are rather dependent on dairy by-products for best results. Dairying is usually carried on, supplementing special orchard or cash crops, to insure a constant income on the farm and to furnish the market for the surplus hay which in this section does not have a ready outlet to sheep and cattle feeders as does the surplus hay of other south Idaho sections more favorably located to stock ranges. Other reasons for the outstanding dairy development in the Boise, Payette, and Weiser valleys are the long seasons of good pastures and usually mild climatic conditions. Development of very satisfactory marketing facilities where highest possible returns are made to the producers thru cooperative cream pools and creameries also has been a factor. The competition of these cooperative agencies

tends to maintain a high price level thruout the section. Then, too, the lack of any outstanding cash crops, together with denser population and smaller farms, has necessitated adjustments and shifts to dairying in this section of Idaho. Some other sections have been able to carry on without dairying because of ability to produce high values per acre with potatoes, beans, beets, and in some sections peas, alfalfa and clover seed.

Dairying in southwest Idaho, as a rule, is not organized on farms with large herds, the number of cows kept per farm depending upon available alfalfa hay, pasture and feed. In normal years some farms which do no dairying have a surplus of hay for sale which finds its outlet thru cattle and lamb feed lots and dairymen secure additional feed needed at low prices.

A study of records of crops gown and livestock kept on individual farms of the Boise Valley for the past 12 years indicates that the more permanent farm operators had more dairy cows, along with fairly large farm flocks of chickens, than did the less stable operators. The cows created a "home market" for hay and feed and the farmers were able to realize something for spare time which might otherwise have been idle. Farmers who were forced to engage in dairying to uphold their economic status and to have funds for paying interest, taxes, water rent, and family living expenses during unfavorable years experienced in the past, have found the enterprise highly profitable because of the very favorable natural conditions, cheap forage and pasture. They have graded up their herds, adopted approved dairy practices, and built efficient marketing agencies thru cooperative effort, and the industry in this section is now on an established and permanent basis.

South Central Idaho

This section, which comprises the north and south side Twin Falls irrigation tracts, the Minidoka project, and adjacent counties to the north, has made considerable progress in dairying. The enterprise, however, has not aproached the development which conditions indicate is possible. This seems due, primarily, to the high values of cash crops in favorable years and the usually ready market for surplus alfalfa hay which is so essential for maintenance of soil fertility and high crop yields. South central Idaho is located favorably to the great sheep and cattle ranges and is ideal for wintering sheep and cattle.

Hazards of price change, insects and other pests, and, in some years, water shortages have tended to cause farmers in this district to give more consideration to dairying to insure a steady income, rather than to risk loss or complete failure waiting for highly profitable crop years. Conditions in south central Idaho in general are as favorable for dairy production as in southwest Idaho but, altho the industry is developing rapidly, it lacks somewhat the stability of the southwest district.

Southeast Idaho

Shorter pasture seasons, rather inefficient marketing facilities to insure full returns, and less favorable climatic conditions have retarded development in southeast Idaho. Longer feeding and more substantial housing are necessary. Unsatisfactory returns from beef cattle have caused farmers to consider dairying and many tried to add to their income by milking beef cows. Disappointment over the results probably has been a retarding factor. In very recent years, however, this section has probably experienced more rapid development in dairying than any other district. There has been outstanding improvement in the quality of dairy cattle by means of bull associations and importations of high-class sires and foundation females. Farmers have increased farm income and dairy profits thru interest in cow testing associations and the adoption of approved dairy practices. Dairying is carried on largely as a major or minor side line. While there are a few large herds in the district, the usual herd has from four to 10 cows, depending on feed available.

Upper Snake District

Altho the Upper Snake district as a whole produces high yields of alfalfa and a large surplus above farm needs, there usually is a very ready market for surplus hay for range cattle, sheep and feed lot purposes. Sugar factories with large tonnages of pulp and the surplus hay attract feeders to this section. The ability of farmers to secure very high values per acre from a rather wide choice of cash crops has tended to keep down dairy expansion to some extent. Potatoes frequently yield $300 to $400 per acre values. Potatoes, seed peas, Grimm alfalfa, clover seed, and sugar beets usually have furnished farmers with sufficient purchasing power to meet current needs. On the whole, this section has been able to carry on without an enterprise like dairying which affords a regular and constant income, but which has the handicap of constant labor requirements.

The pasture season is shorter due to the higher altitude and to climatic conditions, and longer winter feeding is necessary. More substantial housing is necessary than in southwestern and south central Idaho.

Dairying, however, furnishes a substantial source of income. As in southeast Idaho, cheese factories operate in many communities. Much butterfat is shipped to large centers both south and north. Three creameries operate in the Upper Snake to furnish part of the immediate local butter needs. More and more farmers are becoming interested in dairying, at least as a minor side line involving little cash expense except original investment and furnishing some constant cash income during "low value" crop years and assuring a good market for hay.

Palouse District

The Palouse counties have enjoyed an excellent market for butterfat in the Spokane trade territory. Climatic conditions are favorable for dairying and alfalfa can be grown successfully, but the apparent ease

of securing from cash crops, principally wheat, farm income sufficient to maintain themselves, and lack of good pastures, have retarded development of dairying. A lower scale of wheat prices, more attention to production of forage crops and better pasture methods, probably the adoption of sweet clover as a pasture base, undoubtedly will be factors in the growth of dairying in the Palouse section. Extensive advancement of dairying cannot be expected in this region in the near future as a great change in farming methods must first be brought about.

North Idaho and Lemhi

North Idaho has especially favorable marketing conditions. The Spokane trade area embracing the lumber and mining districts furnishes a constant home market. Dairying, however, has not made much progress the past five years. Settlers have been unable to clear land for enough cultivated feed crops to maintain many dairy cows. Yields of feed crops have been low, due to soil conditions. This, however, is being corrected by proper soil treatment. Alfalfa and sweet clover are now being established and should make possible feed production for an increased number of dairy cows. The section also is handicapped by the inadequacy of native pastures. The cut-over land pastures have low carrying capacity.

Building materials are relatively cheap and silos probably will be used to considerable extent when herds become larger.

In spite of production handicaps, agricultural progress in most of the cut-over sections is going to depend largely upon the ability and determination of settlers to produce feed crops, improve pastures, and market their crops thru livestock, principally dairy cattle.

Conditions in Lemhi County, which is included in the North Idaho district for discussion, are favorable for dairying. Alfalfa and feed grains yield well. Potatoes, however, furnish a high value cash crop and retard dairy development.

MANUFACTURING AND MARKETING

Milk Production

Table 21 gives the latest available figures on milk production in the United States, Pacific states, mountain states, and each state of the latter two regions for the census years 1919 and 1924. This is shown graphically in Figure 16. Figures 17 and 18 and Table 21 show the percentage of total milk produced by the western groups of states, and the percentage each of the states contributed toward the total.

FIGURE XVI

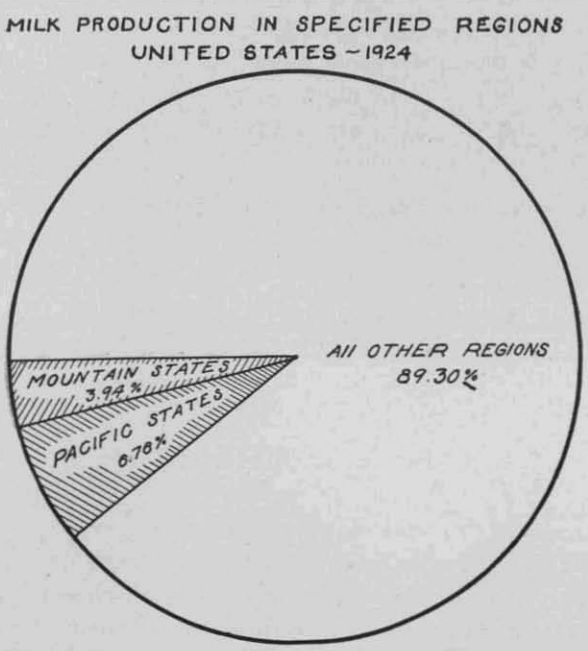


FIG. XVII

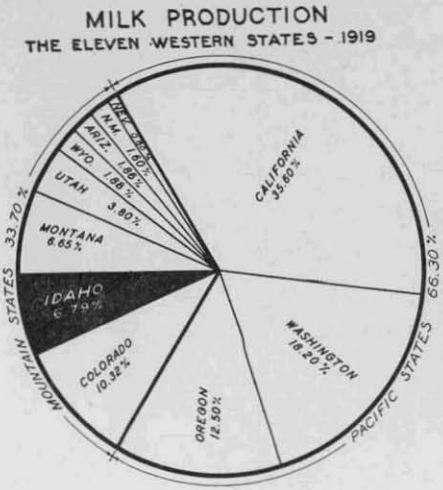
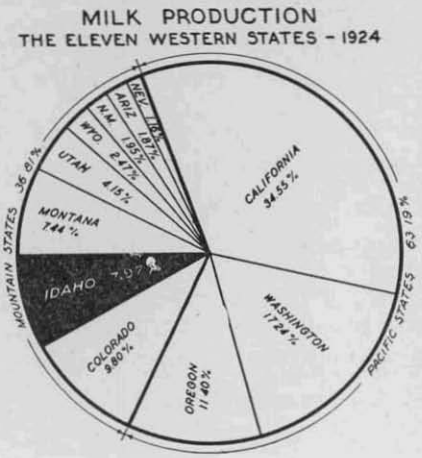


FIG. XVIII



Total milk production in the United States increased about 18 percent in the five-year period 1919-1924 and in the 11 western states 27.9 percent. The mountain states had an increase of 39.2 percent while the Pacific states made a gain of 22.1 percent. The figures show that during the five-year period, 1919 to 1924, production in the western states increased much more rapidly than in the United States as a whole. Furthermore, the gain was more rapid in the mountain group than in the Pacific group. Idaho made about 50 percent increase in production of milk, increasing still more rapidly even than the mountain states.

Due to the small percentage of United States total milk production represented by the 11 western states, the proportion of the total produced in the western group did not change much, the percentage being 9.87 in 1919 and 10.70 in 1924. In 1924 Idaho produced 8 percent of the milk produced in the 11 western states or 0.9 of 1 percent of the total milk of the United States.

Butterfat Marketed

Figure 19 shows the total butterfat sold in 1924, which includes that sold as butterfat and that sold as milk and cream. Unfortunately, census reports do not segregate the milk going to cheese factories, milk sold to cheese factories and condensaries and cream sold to creameries

TABLE 21—Milk Production in the United States and Specified Regions, 1919 and 1924*

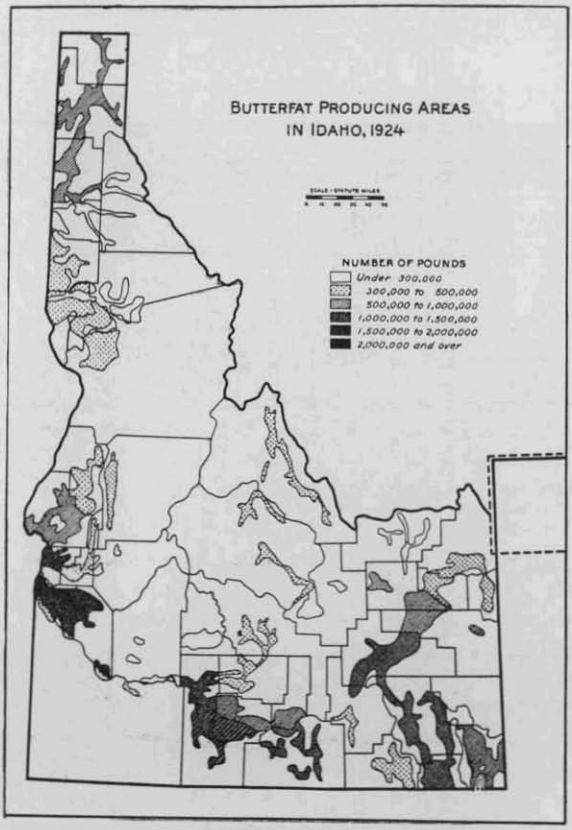
Regions or states	1919 gallons produced	Per cent of United States	Per cent of 11 western states	1924 gallons produced	Per cent of United States	Per cent of 11 western states	Per cent 1924 as of 1919
United States	7,805,143,792	100.00	.....	9,198,303,635	100.00	.....	117.8
Pacific states	509,793,680	6.53	.....	622,372,824	6.76	.....	122.1
Mountain states	260,412,164	3.34	.....	362,511,808	3.94	.....	139.2
Eleven western states	770,205,844	9.87	100.00	984,884,632	10.70	100.00	127.9
California	276,424,216	.....	35.60	340,308,805	.....	34.55	123.1
Washington	140,524,518	.....	18.20	169,846,011	.....	17.24	120.8
Oregon	92,844,946	.....	12.50	112,218,008	.....	11.40	120.8
Colorado	79,492,631	.....	10.32	96,496,262	.....	9.80	121.4
Idaho	32,365,498	.....	6.79	78,505,003	.....	7.97	149.9
Montana	51,251,095	.....	6.65	73,185,407	.....	7.44	144.6
Utah	29,339,512	.....	3.80	40,847,359	.....	4.15	139.2
Wyoming	14,542,841	.....	1.88	24,318,069	.....	2.47	167.2
Arizona	14,370,833	.....	1.86	18,415,661	.....	1.87	128.1
New Mexico	12,737,649	.....	1.60	19,260,659	.....	1.96	151.2
Nevada	6,312,105	.....	.80	11,483,388	.....	1.16	181.9

being listed as butterfat.

The heaviest producing districts in 1924 were the Boise Valley, the Twin Falls tract and Payette County. In 1924 Canyon and Ada counties (Boise Valley) each produced more than 2,000,000 pounds of commercial butterfat, while Payette and Twin Falls counties each produced between 1,500,000 and 2,000,000 pounds. Gooding, Bingham, Bannock, Cassia, and Franklin counties rank next in production with between 1,000,000 and 1,500,000 pounds. All other counties produced less than 1,000,000 pounds each.

In 1919 Ada, Canyon, and Twin Falls counties were the only ones producing between 500,000 and 1,000,000 pounds. Eight counties, namely Kootenai, Latah, Washington, Payette, Cassia, Bingham, Bonneville, and Bear Lake produced between 300,000 and 500,000 pounds. All others produced less than 300,000 pounds that year.

FIGURE XIX



Uses of Milk

Of the milk produced in Idaho in the last census year (1924), the percentage used for various purposes compared with the average for the United States is shown in Figure 20 and Table 22.

FIGURE XX

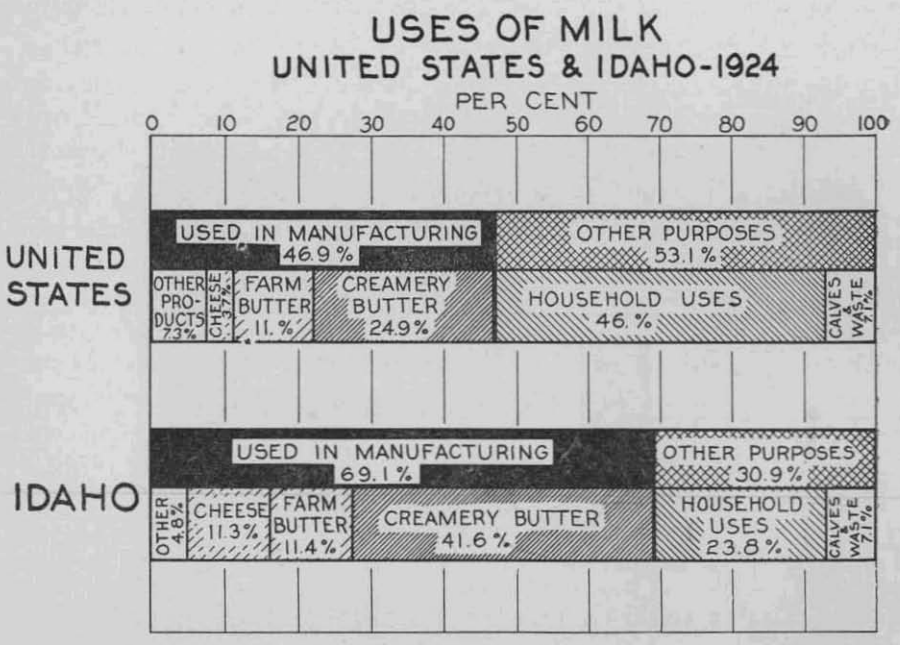


TABLE 22—Percentages of Milk Used for Specific Purposes in United States and Idaho, 1924 (1)

Milk used for manufacturing	United States percent	Idaho percent
Creamery butter	24.9	41.6
Farm butter	11.0	11.4
Total butter	35.9	53.0
Cheese (all kinds)	3.7	11.3
Condensed milk	3.7	4.2
Ice cream	3.4	.6
Other products	.2	.....
Total for manufacturing	46.9	69.1
Milk used for		
Household purposes	46.0	23.8**
Feeding calves	4.1	4.1*
Waste	3.0	3.0*
Total	53.1	30.9
All uses	100.0	100.0

*Same estimates used as for United States.

Almost one-half of the total milk produced in the United States in 1924 was used for manufacturing while more than two-thirds of the total milk produced in Idaho the same year was used for that purpose. This is to be expected, since Idaho produces a large surplus. The small percentage, compared to the United States figure used for household purposes is due to large surplus exported in the form of butter and cheese. Based on the figures used for household purposes we find the per capita consumption to be practically the same in Idaho as it is in the United States.

Manufactured Products

Figure 21 and Table 23 give the quantities of milk used for manufacturing converted into the various products, by years, 1919 to 1925.

Butter is by far the most important manufactured dairy product in Idaho since more than four-fifths of the milk used for manufacturing purposes was made into butter—this does not include farm made butter. Cheese ranks second in importance, taking approximately one-seventh of all milk used for manufacturing. Condensed milk and ice cream rank in the order named but are of much less importance since both combined represent only about one-third of the amount of the milk used for cheese.

FIGURE XXI

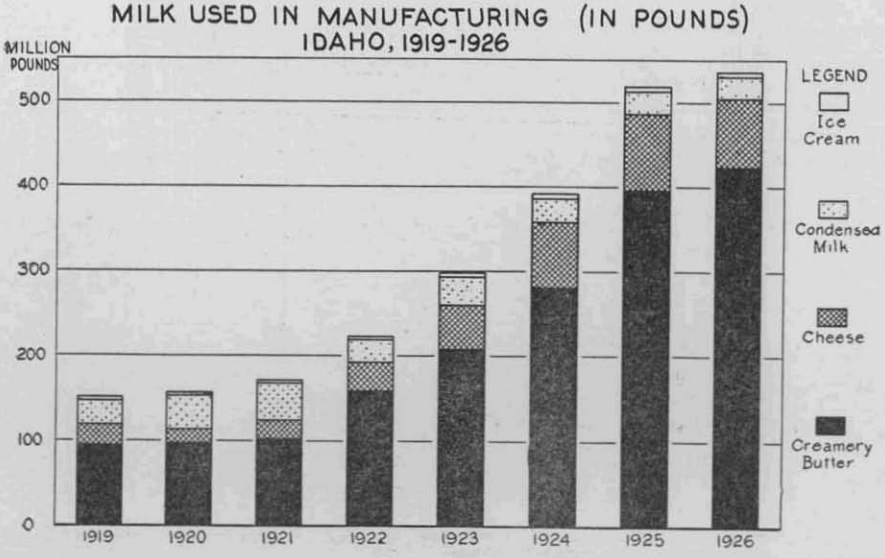


TABLE 23—Use of Milk for Factory Manufacturing in Idaho (000 pounds omitted).

Product	Pounds milk used per unit of product	1922*			1919*			1920*			1921*		
		Manufactured product (pounds)	Milk equivalent (pounds)	Percent	Manufactured product (pounds)	Milk equivalent (pounds)	Percent	Manufactured product (pounds)	Milk equivalent (pounds)	Percent	Manufactured product	Milk equivalent (pounds)	Percent
Creamery butter	21.0	4,514	94,749	62.5	4,660	97,860	62.4	4,935	103,635	60.1	7,582	159,222	71.5
Cheese	10.0	2,582	25,820	17.0	1,727	17,270	11.0	2,161	21,610	12.5	3,368	33,680	151.
Evap. milk (case goods)	2.5	11,093	27,732	18.2	15,412	38,530	24.6	17,835	44,588	25.8	10,652	26,661	11.9
Ice cream	13.75	254	3,493	2.4	239	3,286	2.0	189	2,599	1.6	229	3,148	1.5
		(Gals.)			(Gals.)			(Gals.)			(Gals.)		
Total			151,794	100.0		156,946	100.0		172,432	100.0		222,715	100.0

*As reported by the Bureau of Agricultural Economics, U. S. D. A.

NOTE—The data representing the years 1919 to 1925 inclusive, were obtained from the reports of the Bureau of Agricultural Economics, U. S. D. A. Data for 1926 and additional data for 1925 were obtained from the Bureau of Dairying, Idaho State Department of Agriculture. The latter are the result of reports from all licensed manufacturing plants and should be more accurate than the Bureau of Agricultural Economics data as these were obtained by voluntary reports and some estimations. As might be expected the two sets of figures for 1925 show the state Department of Agriculture figures to be higher and this should be considered in studying table 26. The Idaho Bureau of Dairying was created in 1925.

Creamery butter in 1924 represented 67.8 percent of all milk used for dairy manufacturing (exclusive of farm butter) in the United States and 76.0 percent in Idaho. Cheese was manufactured from 10.5 percent of the milk produced in the United States and 17.4 percent in Idaho. Of the milk used for manufacturing in the United States 10.5 percent was converted into ice cream and 10.5 percent into condensed milk, while in Idaho ice cream used 1.1 percent and condensed milk 5.5 percent of the milk.

The trends of the relative importance of manufactured products are shown in Table 24. In 1919 butter represented 62.5 percent of all milk used for manufacturing and in 1926 it represented 79.5 percent, while cheese changed from 17.0 percent in 1919 to 15.1 percent in 1926. The milk used for ice cream was 2.4 percent in 1919 and 1.1 percent in 1925. Condensed milk represented 18.2 percent in 1919 and 4.4 percent in 1926. During this period total milk production increased.

Data presented in the following pages show that all manufactured products with the exception of condensed milk, increased in volume of production from 1919 to 1925. Therefore, it may be conluded that some products are increasing more rapidly than others, which accounts for the change in their relative importance.

Idaho Dairy Products, 1926

Total Value

In 1926 there was produced in Idaho 23,633,341 pounds of butterfat sold for manufacturing purposes. This is a gain of 17.7 percent over the 1925 figure, 20,110,015 pounds. These figures are reported by the Bureau of Dairying, state Department of Agriculture. Figures for the census year 1924 are the latest available on total milk production. In 1924 57.7 precent of the milk was used for manufacturing, other than farm butter. By allowing for increased production the past two years, the butterfat used for manufacturing may be conservatively estimated at 60 percent of the total production.

Based on this estimate the total production in 1926 would be about 39 million gallons of milk. Figuring butterfat at 35 cents per pound, the value of the total butterfat production in Idaho for the year 1926 was between 13½ and 14 million dollars, which figure does not include the value of by-products. This may be compared to the value of 9 million dollars as reported by the census bureau for 1924.

Butter

Idaho manufactured 20,238,018 pounds of creamery butter in 1926, according to the reports of the Idaho Bureau of Dairying. In 1925 the reports show a total of 16,729,120 pounds made in Idaho, and 2,111,460 pounds made outside of the state from butterfat produced in Idaho.

Idaho ranked nineteenth among the states in creamery butter production during the year 1925 with a total of 15,101,000 pounds, according to estmiates of the Bureau of Agricultural Economics, United States Department of Agriculture. In 1920 the state ranked twenty-fifth. In 1925 Idaho manufactured 1.1 percent of the total creamery butter of the United States. During the six-year period 1920 to 1925, creamery butter production increased about five times.

From Table 24 on page 67 we find that 79.5 precent of all milk used for manufacturing purposes in Idaho during 1926 was made into butter. The importance of butter as a means of marketing milk in Idaho is shown by the fact that of the milk used for manufacturing purposes the amount marketed as butter increased from 62.5 percent in 1919 to 79.5 percent in 1926.

Creamery Butter Production

The rate of increase in creamery butter production in Idaho, compared with the rate of increase in the United States, Pacific states, and mountain states is shown in Figure 22 and Table 25. The percentage of the total United States production for 1925, produced in the Pacific states, and Idaho is shown in Figure 23.

FIGURE XXII

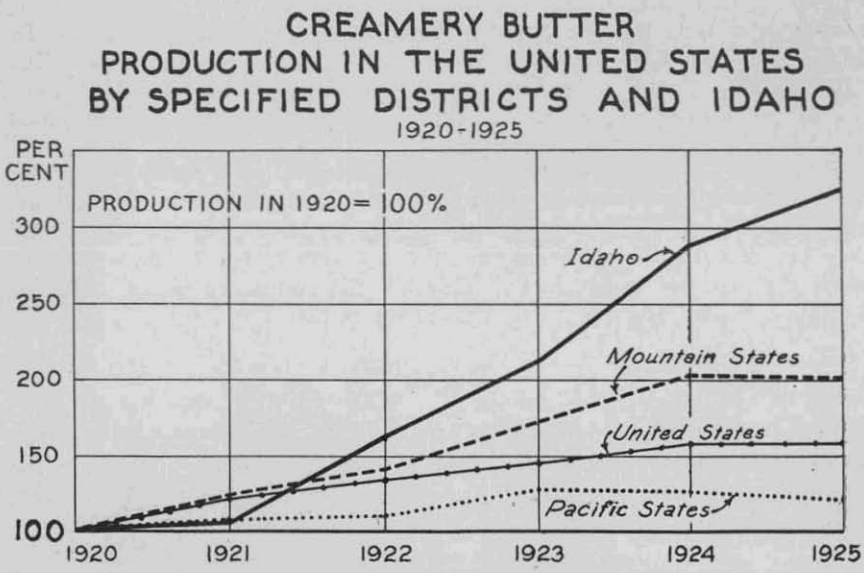


FIGURE XXIII

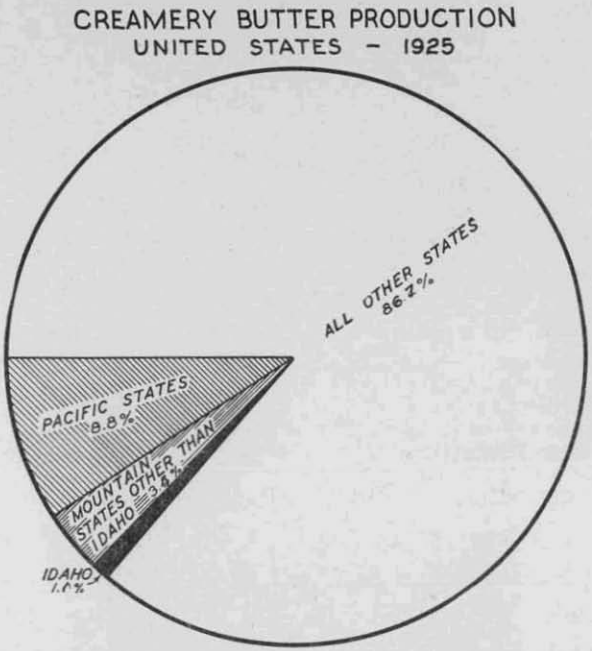


TABLE 24—Creamery Butter: Estimated Production in the United States, Specified Districts and Idaho, 1920-1925 (000 omitted)*

Year	United States		Pacific States		Mountain States		Idaho	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
1920	863,577	100	99,909	100	30,101	100	4,660	100
1921	1,054,938	122	107,327	107	37,275	124	4,935	106
1922	1,153,515	134	111,338	111	42,415	141	7,582	163
1923	1,252,214	145	126,737	127	51,715	172	9,883	212
1924	1,356,080	157	125,833	126	60,959	203	13,431	288
1925	1,356,526	158	119,619	120	60,849	202	15,101	324
1925	As reported by state Bureau of Dairying						16,729	
1926	As reported by state Bureau of Dairying						20,238	

*As reported by Bureau of Agricultural Economics, U. S. D. A. except when otherwise specified. Comparisons are made on U. S. D. A. figures as all are on comparative basis.

The 11 western states produced 15 percent of the total creamery butter in the United States in 1920 and 13.3 percent in 1925. Altho creamery butter production increased nearly 39 percent in the western states during the six-year period the rate of increase was not as great as the average for the United States. The Pacific states, with a faster growing population, made less increase than the mountain states.

In 1920 the 11 western states represented 8.4 percent of the population of the United States and in 1925 this had been increased slight'y, to 8.9

Total Production (Factory and Farm)

Farm butter is of sufficient volume to be quite a factor in considering the butter situation in any section. Data on farm butter production are available only by census years. Table 26 shows the amount of farm and factory butter produced in the United States and the western states for the census years 1919 and 1924. Figure 24 shows the percentage of the total butter produced in the United States in 1924, that was produced in the Pacific states, mountain states, and Idaho. Figures 23-a and 23-b show the percentage of the butter produced in the 11 western states produced in each state for the years 1919 and 1924.

FIG. XXIII-a

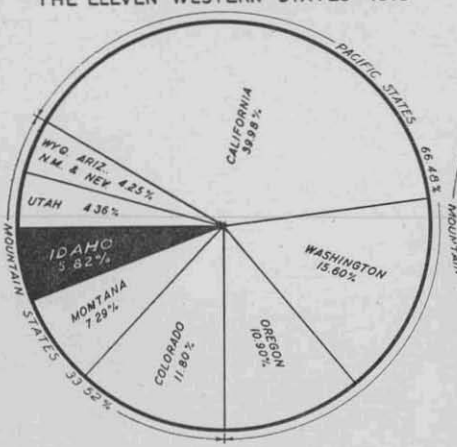
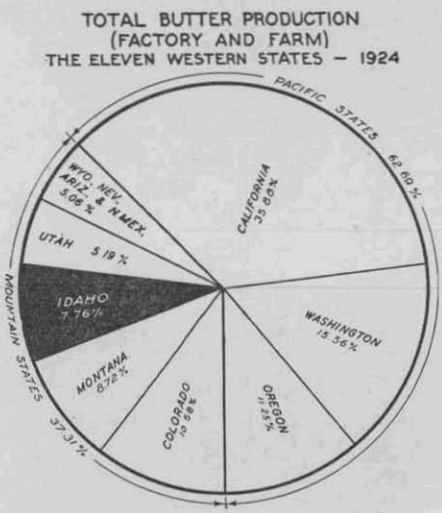


FIG. XXIII-b



Of the total butter produced in the United States the 11 western states produced 10.7 percent in 1919 and 11.3 percent in 1924. The Pacific states produced 7.1 percent in both 1919 and 1924. The mountain states produced 3.6 percent of the total in 1919 and 4.2 percent in 1924. Idaho produced .63 of 1 percent of the United States total in 1919 and .87 of 1 percent in 1924.

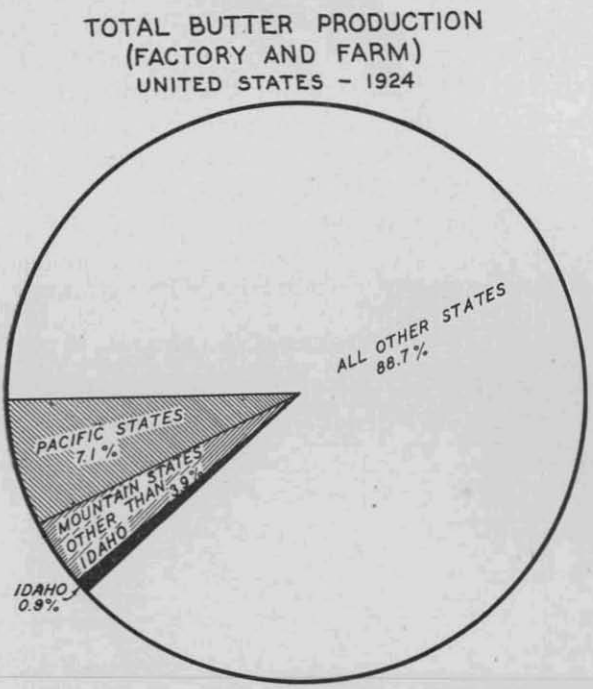
The 11 western states represented 8.8 percent of the total population of the United States in 1919 and 8.9 percent in 1924. The Pacific states represented 5.5 percent in 1919 and 5.6 percent in 1924, the mountain states 3.3 percent in 1919 and the same in 1924. The population of Idaho was 0.44 of 1 percent of the United States total in 1919 and 0.43 of 1 percent in 1924.

TABLE 25—Total Butter Production (Factory and Farm), 1919 and 1924 (000 omitted).

Region	1924						1919					
	Factory*		Farm**		Total butter (pounds)	Percent of U.S. total by regions	Factory*		Farm**		Total butter (pounds)	Percent of U.S. total by regions
	Pounds	Per cent of total butter	Pounds	Per cent of total butter			Pounds	Per cent of total butter	Pounds	Per cent of total butter		
United States	849,994	54.5	707.666	45.5	1,557,660	100.0	1,356,080	69.4	600,000	30.7	1,956,080	100.0
Mountain states	33,220	59.2	22,840	40.8	56,060	3.6	60,959	73.7	21,709	26.3	82,468	4.2
Pacific states	95,362	85.7	15,835	14.3	111,197	7.1	125,833	90.7	12,827	9.3	138,658	7.1
Eleven western states						Per cent of western total by states						Per cent of western total by states
California	61,140	91.4	5,758	8.6	66,898	39.98	75,509	95.2	3,836	4.8	79,345	35.88
Washington	20,238	77.4	5,900	22.6	26,137	15.60	29,331	85.1	5,000	14.9	34,421	15.56
Oregon	13,984	76.9	4,178	23.1	18,162	10.90	20,993	84.3	3,901	15.7	24,892	11.25
Colorado	13,983	70.8	5,776	29.2	19,758	11.80	18,130	78.1	5,245	21.9	23,375	10.58
Idaho	5,273	53.8	4,540	46.2	9,813	5.82	13,431	78.5	3,662	21.5	17,093	7.76
Montana	6,094	50.5	5,961	49.5	12,056	7.29	13,874	71.9	5,416	28.1	19,290	8.72
Utah	4,411	60.4	2,877	39.6	7,287	4.36	8,585	74.6	2,913	25.4	11,498	5.10
Wyoming	1,325	48.2	1,423	51.8	2,748	1.64	1,941	52.5	1,760	47.5	3,701	1.67
Arizona	1,040	63.6	593	36.4	1,634	.97	2,107	73.4	761	26.6	2,868	1.29
New Mexico	6	.4	1,404	99.6	1,410	.84	251	12.9	1,707	87.1	1,758	.79
Nevada	1,088	80.5	266	19.5	1,354	.80	2.640	92.4	244	7.8	2,884	1.31
Total	128,582	76.9	38,675	23.1	167,257	100.00	186,792	84.4	34,535	15.6	221,125	100.00

*Bureau of Agricultural Economics, U. S. D. A. reports.
**U. S. census reports.

FIGURE XXIV



These figures indicate that the 11 western states produce a surplus of butter (assuming per capita consumption to be about the same in the West as in the East) and that butter production is increasing more rapidly than population.

A study of the individual western states shows that although California increased in butter production the gain was not sufficient to maintain her percentage production of the total in the western states. In 1919 California produced 40 percent and in 1924 about 36 percent of the total butter produced in the western states. Washington, the next largest producer, made less than half as much as California in 1924. California produced as much as the total of her three nearest competitors—Washington, Oregon and Colorado. California produced about one-third, Washington, Oregon and Colorado combined about one- third, and the other seven inland states about one-third.

Thus California is the key state of the West in butter production. Some people believe that the growing population of California will cause some of the milk now being converted into butter to be directed into the whole milk markets. Any change of this kind in the future will have a very important bearing on the butter situation in all the other western states.

Farm and Factory Butter

A study of Table 26 shows that the percentage of farm butter production is becoming smaller in all sections. It is interesting to note that the percentage of factory butter in the United States in 1924 was 69.4 while the percentage in the Pacific states was 90.7 and in the mountain states 73.7. This would indicate that butter manufacturing is on a better basis than the average for the United States. A great variation is found in the percentage of butter made in each of the western states, that is, factory butter. The states with the largest production have the largest percentage of their total butter made in factories.

FIGURE XXV

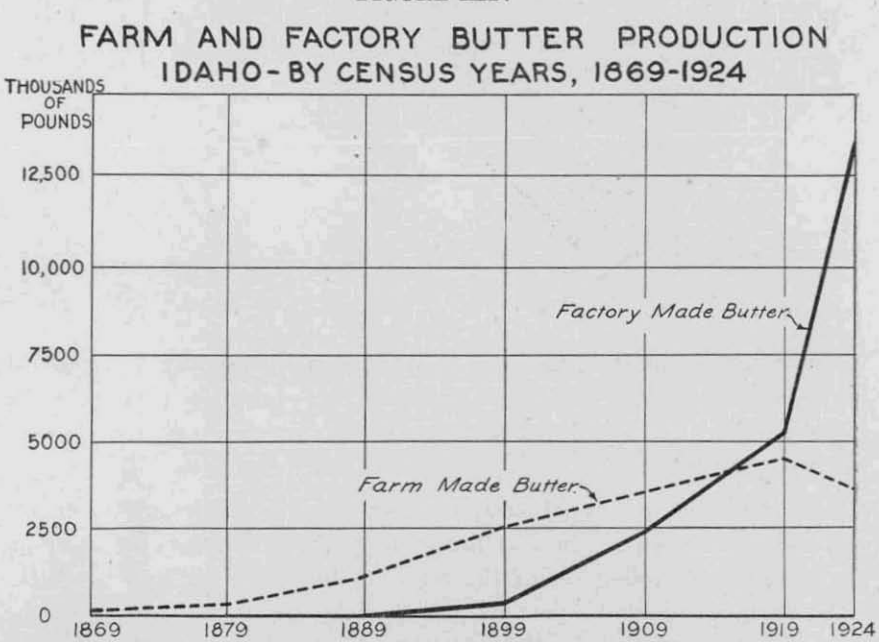


TABLE 26—Comparison of Farm and Factory Butter Production in Idaho, Census Years 1869-1919*

Year	Farm-made		Factory-made		Total farm and factory production
	Pounds*	Per cent total	Pounds**	Per cent total	
1924	3,661,728	21.4	13,431,000	78.6	17,092,728
1919	4,540,364	46.2	5,272,857	58.8	9,813,221
1909	3,542,125	60.1	2,357,386	59.9	5,899,521
1899	2,520,316	85.3	432,570	14.77	2,952,886
1889	1,078,103	98.7	13,650	1.3	1,091,753
1879	310,644	98.8	3,600	1.2	314,244
1869	111,480	100.0	.....	.....	111,480

*As reported by Bureau of Census.
**As reported by Bureau of Agricultural Economics.

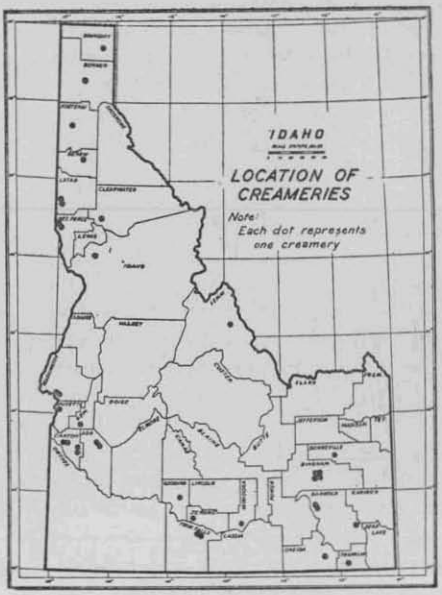
In Idaho farm butter represented 21.4 percent of total butter production in 1924. The change in the relative amounts of creamery and farm butter produced in Idaho is shown in Figure 25 and Table 26.

It is only since 1900 that much factory butter has been produced but since then the percentage has increased from 14.7 to 78.6. This fact, together with the rapid increase in the volume of production, has been responsible for the development of efficient creameries.

Creameries in Idaho

The map on this page shows the location of licensed creameries in Idaho in 1927. (See appendix for list.) Not only the greatest number but the largest units are located in districts producing the greatest volume of butterfat. Of the 36 creameries in Idaho 22 are rather small, privately owned plants, seven are cooperative, and seven are owned by large corporations and operate along what is known as the centralizing plan.

FIG. XXVI



Forty percent of the butterfat produced in Idaho was manufactured into butter outside of the state in 1920 but in 1925 only 11 percent of the production was manufactured outside the state. This change is advantageous to the producer because formerly much of the cream was handled thru cream buying stations and shipped long distances to market. Producers necessarily must pay the expenses of operating the stations and transportation to distant manufacturing plants. There are now enough manufacturing plants within the state, and some of the transportation expense, at least, has been eliminated and saved to producers. Re-

turns to the producer should be greater, and probably the change has been an impetus to expansion of dairying. Cream stations are still necessary in communities remote from manufacturing plants and in small dairy districts. They pioneer the way for manufacturing plants.

The cooperative creameries deduct only actual costs, giving back all the remainder to the producer, and then may give a higher return. Private agencies must have a profit. In districts where cooperative creameries have been successful, farmers feel that the prices for butterfat have ranged higher than in districts where no such competition exists.

Marketing of Idaho Butter

Pacific coast cities in the past few years have had a very large increase in population. California's butter production during this time increased 17 percent in the six-year period 1920-1925. Washington's increase was 8 percent. The increase in production has not kept pace with the increase in population, and Pacific coast cities are forced to import butter from the most available source. Utah has increased creamery butter production 97 percent, and Idaho 224 percent, in the six-year period. The population of Utah and Idaho have not increased greatly, and nearly all of the increase in production is available for export. Due to the deficit on the coast, markets have been strong the past few years and prices attractive, and the surpluses have gone West. Fifteen small creameries in Idaho report no export of butter outside the state. Carlot shipments of butter from Idaho for 1923, 1924, 1925, and 1926 according to Oregon Short Line Railroad reports, were:

1923 .....188 cars
1924 .....333 cars
1925 .....434 cars
1926 .....469 cars

Replies to a questionnaire sent to all creameries of the state indicate that there has been a definite change in the direction of shipments. The replies show that in 1923 considerable butter was shipped east of the Rocky Mountains and that this percentage gradually decreased. In 1925 probably less than 5 percent went east of the Rockies.

Receipts of Idaho butter at the six leading markets (New York, Boston, Chicago, Philadelphia, San Francisco, and Los Angeles) of the United States durinig the past five years is shown in Table 27.

TABLE 27—Receipts of Idaho Butter at Various Markets, 1921-1926.*
(Thousand pounds)

Market	1921	1922	1923	1924	1925	1926**
Chicago	4	34	233	202	None	Not yet reported
San Francisco	246	402	502	490	1,043	1,191
Los Angeles	Not reported				8,555	13,101
Other markets	None	None	None	None	None	Not yet reported

*1925 Agricultural Yearbook, U. S. Department of Agriculture.
**Market news service, Bureau of Agricultural Economics.

The reports on the Los Angeles market are not available earlier than August, 1924, as this is a newly organized market.

It is seen in the above table that most of the butter exported from Idaho goes to California markets. In 1925 Idaho furnished 3.6 percent of all the butter received on the San Francisco market and in 1926 furnished 4.3 percent of the total. Idaho butter represented 21.4 percent of the total receipts on the Los Angeles market in 1925 and 29.8 percent in 1926. California produced 75 percent of the butter received at the San Francisco market in 1926 and 50 percent of the butter at the Los Angeles market that year. Of the butter imported from outside California, Idaho produced 17 percent of that reaching the San Francisco market and 59 percent of the supply arriving at the Los Angeles market. Inasmuch as so much of the Idaho butter goes to California, a study of the sources of supply of the Los Angeles and San Francisco markets is of interest. The following table gives the states competing with Idaho in these markets.

TABLE 28—Gross Receipts of Butter at San Francisco and Los Angeles Markets* By States of Origin (Thousand pounds)

State	San Francisco						Los Angeles	
	1921	1922	1923	1924	1925	1926	1925	1926
California	23,318	23,352	21,805	22,984	21,587	20,701	23,422	22,011
Oregon	647	585	1,177	948	1,195	2,306	1,196	1,922
Washington	573	332	682	606	469	327	1,157	1,620
Nevada	412	388	293	258	252	63	550	589
Idaho	246	402	502	490	1,043	1,191	8,555	13,101
Montana	160	155	361	700	1,895	2,331	1,541	1,935
North Dakota	49	145	76	—	20	—	—	—
Utah	38	136	179	158	98	95	1,219	1,952
Illinois	34	118	—	1	204	—	144	—
Colorado	27	120	30	21	545	192	875	748
Nebraska	25	46	25	47	349	55	115	16
Minnesota	—	74	—	172	268	339	410	—
Iowa	—	51	24	—	257	—	—	19
Wyoming	—	8	—	24	—	—	—	24
Missouri	—	4	26	—	—	—	—	1
New York	—	—	15	—	—	—	236	6
Wisconsin	—	—	—	1	195	—	294	45
Arizona	—	—	—	1	—	1	—	14
Other states	201	—	—	—	69	—	210	—
Canada	—	—	316	—	326	—	—	—
Texas	—	—	—	—	—	3	—	—
Kansas	—	—	—	—	—	—	—	26
Pennsylvania	—	—	—	—	—	—	—	1
Total	25,730	25,916	25,511	26,411	28,752	27,604	39,924	44,030

*Compiled from U. S. Bureau of Agricultural Economics, market news service.

Most of the butter arriving at these markets comes from the western states. Idaho shipped nearly 11 times as much butter to Los Angeles as to San Francisco. Idaho seems to have no particular state, other than California, as a chief competitor at Los Angeles altho Utah, Montana, Oregon, and Washington ship there in considerable quantities. It seems fortunate that Idaho ships largely to this market, both from the standpoint of competition and from the fact that it is a larger and faster growing market than San Francisco. San Francisco apparently does not offer

FIGURE XXVII

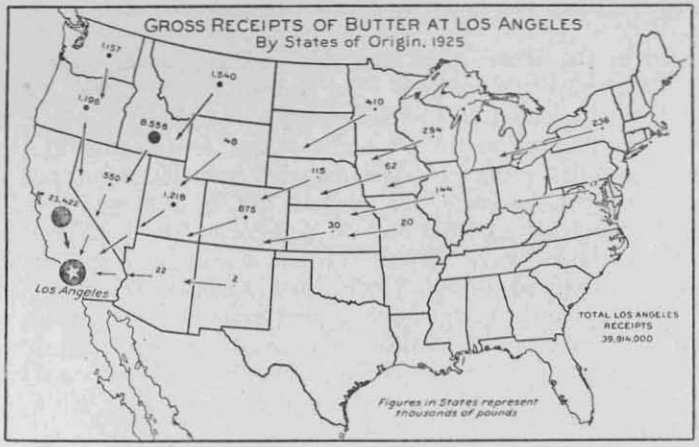


FIGURE XXVIII

as much opportunity for imported butter, and Oregon and Montana seem to be diverting the majority of their export butter to this market.

Idaho has been able to make such rapid progress at Los Angeles market because, all the cooperative creameries sell their entire output, other than that required for local demand, at this market.

Idaho has made rapid strides in improving the quality of its butter. In several sections where dairying is intensified some cooperative creameries report receiving from two-thirds to three-fourths of their cream "sweet", from which they make a superior quality of butter. This is a very important reason why Idaho butter has met with favor in Los

FIGURE XXIX

Angeles. The quality of butter manufactured in the future also will determine to what extent competition can be met.

Pacific coast markets are now drawing nearly all of their supply from the Pacific slope states. When supplies of butter in the western states exceed the local requirements the coast markets will weaken, prices will drop to a level of the middlewestern and eastern markets, transportation considered, or the reverse may happen and eastern markets strengthen to correspond with the coast. In other words, prices in eastern and western markets will tend to equalize.

It costs only 1.4 cents more per pound to ship butter from Caldwell to Chicago or New York than it does to ship to Los Angeles. If the west coast market weakens, due to increased production, or the eastern market strengthens because of decreased production in the east, Idaho can ship east without a very severe handicap to the industry.

Seasonal Shipments

Figure 30 and Table 29 show the seasonal movement of butter from Idaho as computed from the average monthly carlot shipments reported by the Pacific Fruit Express Company. The figure and table indicate that there is not a great deal of variation, as the average monthly shipments have ranged between 20 and 32 cars. There is, however, a heavier movement during the flush pasture season.

FIGURE XXX

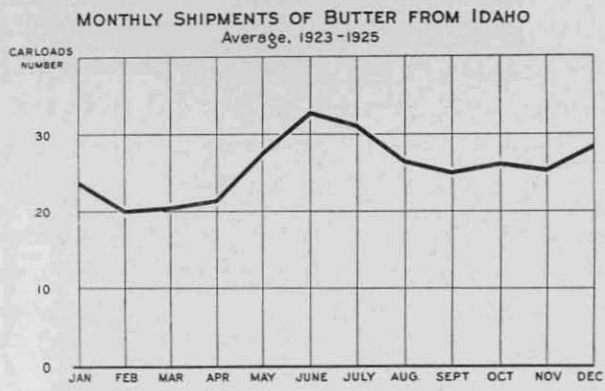


TABLE 29—Carlot Shipments of Butter from Idaho, 1920-1926.*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1920	5	2	2	1	0	5	1	4	4	5	7	4	40
1921	7	5	2	1	4	7	9	9	4	3	10	12	73
1922	12	10	12	7	7	17	23	12	13	10	10	20	153
1923	14	10	14	6	11	23	18	19	15	18	15	17	180
1924	24	24	23	27	32	32	32	26	22	30	28	31	331
1925	33	26	24	31	39	43	43	34	38	30	33	37	411
1923-25 Average	23 2-3	20	20 1-3	21 1-3	27 1-3	32 2-3	31	26 1-3	25	26	25 1-3	28 1-3	
1926	42	33	38	43	51	51	48	36	46	44	47	47	536

*Data from special reports of Pacific Fruit Express. Data do not include shipments from North Idaho. The latter, however, are not an important factor in the state total.

Cheese

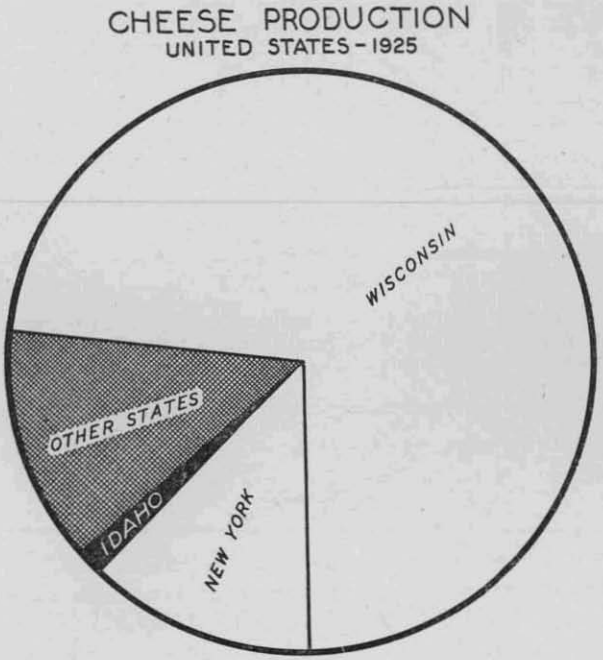
In 1926 8,103,490 pounds of cheese was manufactured in Idaho according to reports from the Idaho Bureau of Dairying. Similar reports for 1925 showed 9,171,150 pounds of cheese made in this state, the 1926 production decreasing 12 percent as compared with the 1925 total.

Idaho ranked fifth among the states in cheese production in 1925 according to estimates of the Bureau of Agricultural Economics. United States Department of Agriculture. Wisconsin ranked first with a production of 319,871,000 pounds, followed by New York with 55,642,000 pounds, Oregon with 10,030,000 pounds, Minnesota with 9,030,000 pounds, and Idaho with 7,423,000 pounds. (U. S. estimates are lower than Idaho

figures but are satisfactory for comparison with other states). Wisconsin produced 72.1 percent of all the cheese in the United States and New York produced 12.4 percent, making approximately 85 percent of the cheese produced in these two states. Although ranking fifth in production, Idaho produced only 1.6 percent of the cheese in the United States. The situation is shown graphically in Figure 31.

The cheese industry has made a rather phenomenal growth in Idaho in the last few years.. Cheese is the second most important manufactured dairy product in the state. Of the milk used for manufacturing dairy products 15.1 percent was converted into cheese. In 1926 81,030,000 pounds or 9,422,000 gallons, was used for cheese making.

FIGURE XXXI



Production of Cheese

The following graph and table indicates the increase in cheese production in the United States, Pacific states, mountain states, and Idaho during the years 1920 and 1925:

FIGURE XXXII

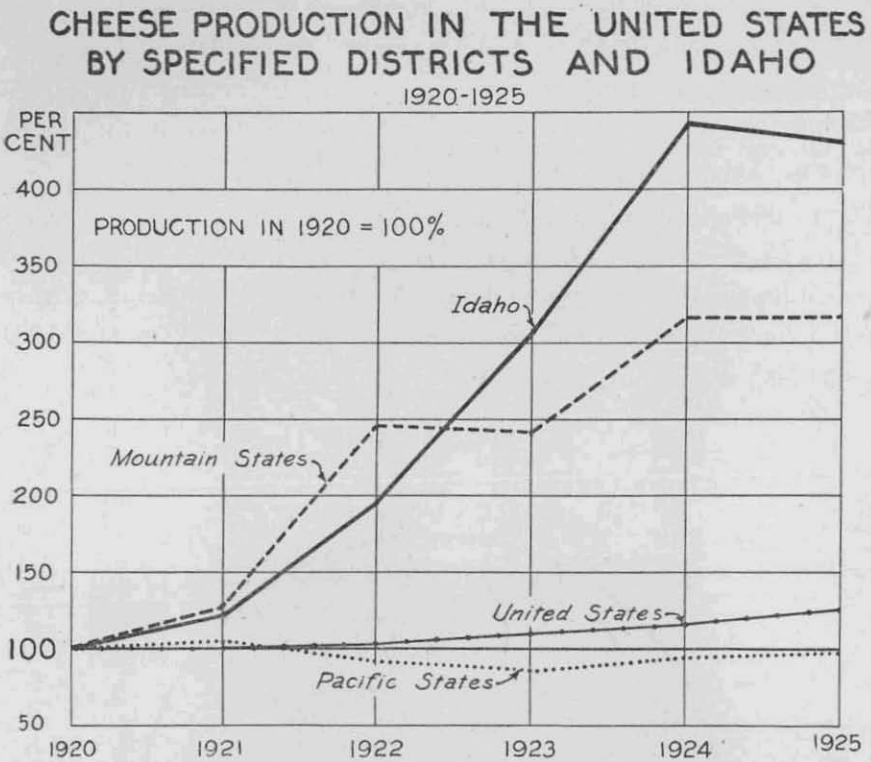


TABLE 30—Cheese: Estimated Production in the United States, Specified Districts, and Idaho, 1920-1925* Pounds (000 omitted)

Year	United States		Pacific States		Mountain States		Idaho	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Per cent	Pounds
1920	351,506	100	17,645	100	4,273	100	1,727	100
1921	352,650	100.3	18,590	105.3	5,443	127.2	2,117	122.5
1922	365,316	103.9	16,371	92.8	10,539	246.4	3,368	195.0
1923	390,425	111.0	15,286	86.6	10.353	242.0	5,316	307.8
1924	405,865	117.0	16,920	96.0	13,548	317.0	7,670	444.0
1925	443,514	126.2	17,242	98.0	14,417	317.0	7,423	430.0
1925	As reported by Idaho Bureau of Dairying						9,172	
1926	As reported by Idaho Bureau of Dairying						8,103	

*U. S. Bureau of Agricultural Economics reports except where otherwise specified. Comparisons of states are made on U. S. D. A. figures, all being on same basis.

The percentage increase in cheese production in Idaho since 1920 has been greater than the increase in butter or number of dairy cattle. This is probably explained by the impetus given to the cheese industry in 1922 and 1923 when the Kraft Cheese Company was influential in starting several cheese factories and installed a processing plant at Pocatello. Cheese production in this state increased 330 percent from 1920 to 1925. During the same period the increase in the mountain states was 217

percent and there was an increase in the United States of 26.2 percent. The 11 western states produced six percent of the cheese of the United States in 1920 and altho cheese production increased 44 percent in those states the gain was just about enough to maintain the same percentage of the total in 1925, the great increase in the mountain states being enough to offset the slight reduction in the Pacific states and equalize the increase made in the entire United States.

Figure 33 and Table 31 show the changes in cheese production in the 11 western states:

FIGURE XXXIII

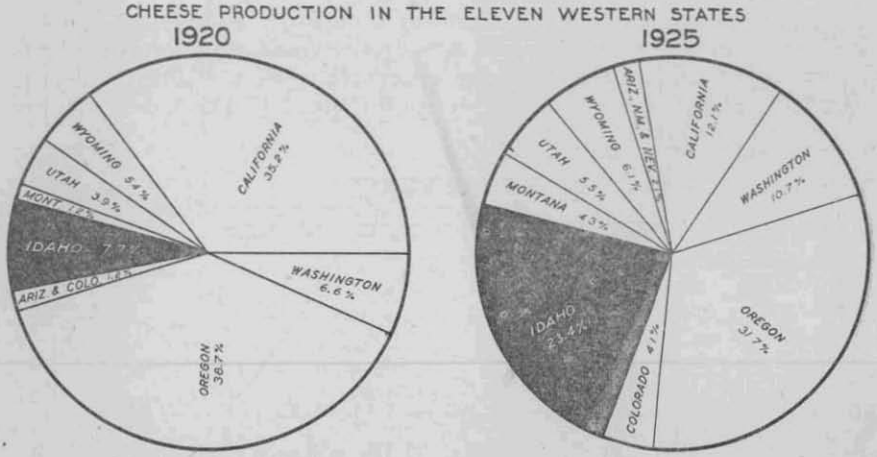


TABLE 31—Cheese Production in the 11 Western States*

States	1920 Pounds produced	produced Per cent	1925 Pounds produced	Per cent produced
California	7,719,000	35.2	3,823,000	12.1
Washington	1,444,000	6.6	3,389,000	10.7
Oregon	8,482,000	38.7	10,030,000	31.7
Colorado	106,000	.5	1,288,000	4.1
Idaho	1,727,000	7.7	7,423,000	23.4
Montana	266,000	1.2	1,365,000	4.3
Utah	849,000	3.9	1,753,000	5.5
Wyoming	1,180,000	5.4	1,923,000	6.1
Arizona	150,000	.7	543,000	1.7
New Mexico	.....	.....	56,000	.2
Nevada	.....	.....	66,000	.2
Total Production	21,923,000	100.0	31,659,000	100.0

*Includes cheddar, Swiss, brick and Italian. Does not include cottage, bakers, cream, and neufchatel.
(See appendix for increase in cheese production on each section of U. S.)

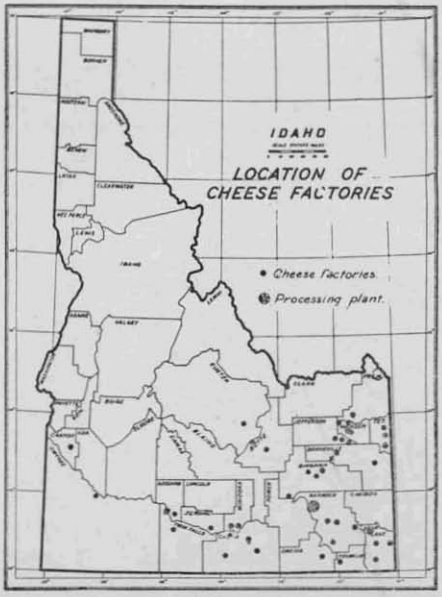
California produced less than one-half as much cheese in 1925 as in 1920, production dropping from 35.2 percent of the total for the 11 western states in 1920 to 12.1 percent in 1925. Oregon increased production but dropped from 38.7 percent of the total in 1920 to 31.7 percent

in 1925. Washington greatly increased production and advanced its percentage of the western total from 6.6 percent in 1920 to 10.7 percent in 1925. The mountain states made very large increases, especially Idaho, the latter changing from 7.9 percent of the total production in the 11 states in 1920 to 23.4 percent in 1925, thereby ranking next to Oregon in production.

Cheese Factories in Idaho

The following map shows the location of licensed cheese factories in Idaho. The number has increased from 17 factories in 1920 to 43 in 1927. A list is given in the appendix. Of the 43 factories, 17 are owned by the H. F. Laabs Cheese Company, seven by the Nelson-Ricks Creamery Company, four by the Mutual Creamery Company. Four plants are co-operative and the remaining are privately owned. All of the plants are manufacturing cheddar cheese except the West Point factory at Wendell and the Teton Valley factory at Tetonia. The latter two are making Swiss cheese.

FIGURE XXXIV



As is indicated by location of the factories the Idaho cheese indusrty has developed most rapidly in the eastern part of the irrigated section of the state. This is the region of rather recent development in dairying. The increased interest in dairying together with the lack of close proximity to well-developed creameries may be considered partially the reason for this regional development. The fact that fewer cows are necessary to support a cheese factory than a creamery and the fact that a number

of communities were somewhat isolated also contributed to this expansion. The location of the processing plant of the Kraft Cheese Company at Pocatello undoubtedly influenced development, as it furnished a ready outlet for much of the cheese produced.

Marketing Idaho Cheese

Reports of the Oregon Short Line Railroad Company show carlot shipments of cheese from Idaho as follows:

1923	177 cars
1924	361 cars
1925	455 cars
1926	471 cars

The Kraft Cheese Company started operating in Idaho in 1923 and part of the increase in carlot shipments from 1923 on may be cheese shipped in from other states, processed and shipped out of Idaho after processing.

Destinations of Idaho cheese are not available, but Pacific Fruit Express Company reports on destinations of all dairy products indicate that only a very small percentage of all dairy products went east in 1925. The mountain and Pacific states absorbed the largest part of Idaho cheese.

In a study of six large markets (New York, Boston, Chicago, Philadelphia, San Francisco, and Los Angeles,) it was found that during the six years, 1921 to 1926, inclusive, Idaho cheese is reported at only three markets. The following table lists the Idaho cheese shipped to these markets.

TABLE 32—Receipts of Idaho Cheese at Various Markets.*
(In thousand pounds)

Market	1921	1922	1923	1924	1925	1926**
Chicago	.....	19	168	675	337	Not yet reported
San Francisco	139	222	1,039	2,262	2,835	2,858
Los Angeles	Not reported				3,922	4,441

*1925 Agricultural Yearbook, U. S. Department of Agriculture.
**Market news service, Bureau of Agricultural Economics, U. S. Department of Agriculture.

Table 32 indicates that Idaho cheese goes to the same markets as Idaho butter altho a larger proportion goes to San Francisco than in the case of butter. In 1926 Idaho furnished 29.5 percent of the cheese received on the Los Angeles market and 22.8 percent of that arriving at San Francisco. California produced 17 percent of the cheese marketed at Los Angeles and 17 percent of that sold at San Francisco. Of the cheese imported into California, the Los Angeles market showed 35.6 percent and the San Francisco market 27.4 percent coming from Idaho. The amount of Idaho cheese that went to Chicago was only 4.75 percent of the total shipped to the three markets in 1925. Wisconsin furnishes 91 percent of the cheese found on the Chicago market, Idaho cheese re-

TABLE 33—Gross Receipts of Cheese at San Francisco and Los Angeles Markets, by States of Origin* (Thousand pounds)

State	San Francisco						Los Angeles	
	1921	1922	1923	1924	1925	1926	1925	1926
California	4,800	3,416	3,650	2,603	2,316	2,123	2,183	2,570
Per cent of gross receipts produced in California	47.8	37.3	31.2	22.7	18.4	16.9	18.3	17.1
Other western states:								
Oregon	2,245	2,448	2,557	2,710	3,029	3,148	2,395	3,124
Idaho	139	222	1,039	2,262	2,835	2,858	3,922	4,441
Utah	24	10	17	76	164	387	354	536
Colorado	176	322	222	256	323	294	343	672
Montana	.....	56	338	5	64	79	.....	119
Washington	145	108	112	58	120	50	106	199
Total western states	7,529	6,582	7,935	7,970	8,851	8,939	9,303	11,661
Per cent of gross receipts from western states	78.2	71.9	67.9	69.4	74.7	71.3	78.2	77.4
Eastern states:								
Wisconsin	1,064	1,353	1,979	2,216	1,987	2,694	2,017	2,579
New York	388	314	249	310	307	529	48	289
Illinois	505	855	1,441	821	463	222	233	264
Minnesota	.....	.....	63	152	154	94	132	24
Total eastern states	1,957	2,522	3,732	3,499	2,911	3,539	2,430	3,156
Other states	20.3	27.6	31.9	30.5	24.6	28.2	20.4	20.6
Per cent other states	146	53	23	13	93	52	167	243
Per cent from eastern states	1.5	.6	.2	.1	.8	.4	1.4	1.6
Total	9,632	9,157	11,690	11,482	11,855	12,530	11,900	15,600

presenting only 0.25 of 1 percent. Therefore, it is apparent that the important markets for Idaho cheese are the two California cities.

Table 33 shows the source of all cheese received at the California markets during the past six years.

This shows that both California markets are increasing in annual receipts. This is probably a result of the demand resulting from increased population. Production in California is decreasing, the 1925 production being 3,823,000 pounds, as compared to 7,719,000 pounds in 1921, a reduction of nearly 50 percent. The 11 western states, including California, have increased production, but apparently cheese furnished by the western states for California markets have increased just enough to maintain about the same percentage of the total received as in previous years.

The main competing states with Idaho at these markets are Oregon, Wisconsin, and California. These four states combined produced in 1926 85 percent of the cheese received at Los Angeles and San Francisco. Oregon and Wisconsin are increasing in shipments to these markets while California is decreasing. Idaho has made an enormous increase in shipments.

These markets are growing rapidly in receipts and whether Idaho will be able to compete with Oregon and Wisconsin in the future will depend on the quality of Idaho cheese and the differential in cheese prices on the coast and in the Middlewest.

Figures 35 and 36 show the origin of the gross receipts of cheese at the Chicago and San Francisco markets in 1925.

FIGURE XXXV

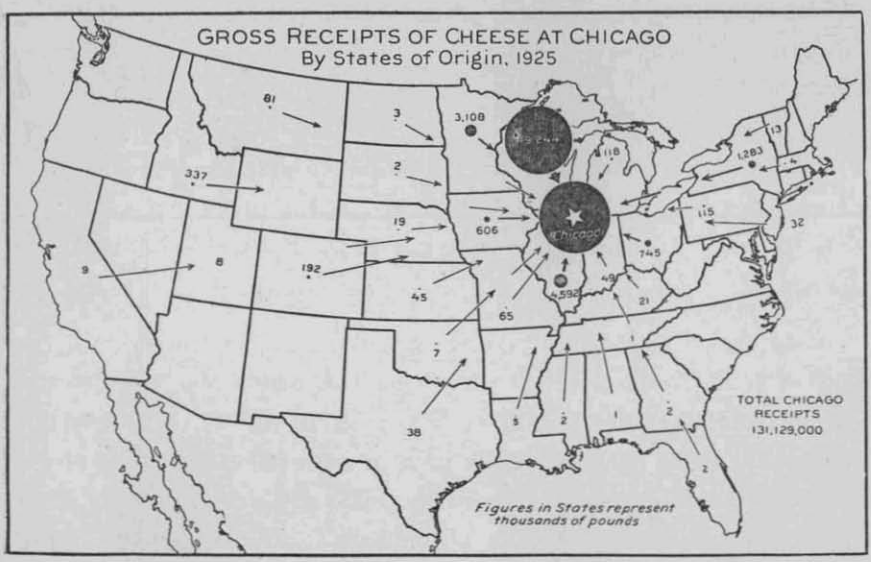
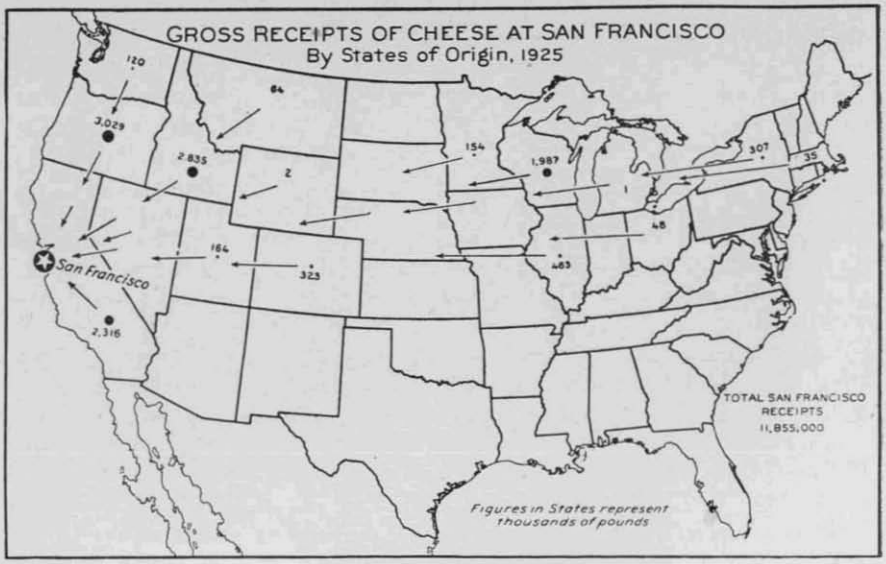


FIGURE XXXVI



Condensed Milk

The only milk condensary in Idaho is located in the Boise Valley, at Nampa. A condensary was formerly in operation at Franklin, but it closed in December, 1921. Much of the milk formerly marketed at the Franklin plant has been diverted to a condensary at Richmond, Utah.

The condensed milk manufactured in Idaho in 1926 totaled 9,366,939 pounds, according to reports of the Idaho Bureau of Dairying. In 1925 reports from the same source show a total production of 10,040,000 pounds.

Idaho ranked nineteenth among the states in condensed milk production in 1925. During that year 8,956,000 pounds of condensed milk was manufactured from 22,400,000 pounds of milk. The enterprise ranks third in the amount of milk used in manufacturing in Idaho. Of all milk used for manufacturing dairy products during 1926 in Idaho. 4.4 percent was converted into condensed milk. For a number of years,

all milk condensed has been made into unsweetened evaporated milk and put up into case goods. The amount manufactured has been diminishing the past few years, as shown by the following figures:

Year	Evaporated milk Manufactured (in pounds).*
1918	5,677,000
1919	11,093,000
1920	15,412,000
1921	17,835,000
1922	10,661,000
1923	13,668,000
1924	11,365,000
1925	8,956,000
1925	10,040,000 **
1926	9,367,000 **

*As reported by Bureau of Agricultural Economics, U. S. D. A. These estimates are lower than state reports but they show the trend of production.

**Idaho Bureau of Dairying reports.

Ice Cream

Of the milk manufactured into dairy products in Idaho in 1926 only 1.0 percent was used for ice cream making. During that year 373,781 gallons of ice cream was manufactured, according to reports of the Idaho Bureau of Dairying. Idaho ranked forty-sixth among the states in total ice cream production in 1925.

Twenty-seven ice cream plants are operating in the state, but many are very small and do not do a very large volume of business. Due to the nature of the product each manufacturer is restricted to local trade and a limited surrounding territory. Expansion of the ice cream industry can only come with increased population within the state and particularly within the cities. The following figures give the production of ice cream in Idaho during the years 1918 to 1926:

Year	Ice cream manufactured (gallons)	Ice cream mix (pounds)	Total ice cream equivalent (gallons)
1918	207,000	.....	.....
1919	254,000	.....	.....
1920	239,000	.....	.....
1921	189,000	.....	.....
1922	229,000	.....	.....
1923	271,000	.....	.....
1924	320,000	95,000	341,000
1925	322,000	176,000	360,000
1925—Idaho Bureau of Dairying reports			381,580
1926—Idaho Bureau of Dairying reports			373,781

*Bureau of Agricultural Economics, U. S. D. A. reports except where otherwise specified.

Dairy By-Products

The only dairy by-products that have been manufactured in Idaho previous to 1927 have been casein, manufactured from skimmed milk, and a limited amount of milk curd, manufactured from buttermilk. The latter commodity has a consistency and composition similar to semi-solid buttermilk but lacks the same uniformity and usually is not as concentrated. Three plants are manufacturing casein. They are located at Buhl, Meridian, and Boise. The plant at Buhl started operation in January, 1927. Production figures on this by-product in Idaho by years, follow:

Year	Casein manufactured (in pounds).*
1919	21,000
1920	102,000
1921	16,000
1922	26,000
1923	102,000
1924	129,000
1925	217,000

*Bureau of Agricultural Economics, U. S. D. A. reports.

Much interest has been exhibited in development of the by-product end of the dairy manufacturing business during recent years. Early in 1927 one creamery at Nampa installed a milk drying plant for handling either skim milk or butter milk. Another plant at Payette installed equipment for making condensed buttermilk. In the past creameries have been selling buttermilk by the gallon to their patrons. Several plants have not attained sufficient volume of business to warrant consideration of some better method of marketing. Dried buttermilk and semi-solid buttermilk would seem to be logical forms in which to dispose of this product since both keep well and a ready market could be

found among farmers for poultry, hog and calf feeding. Some thought has been given to dried skimmilk as a form in which to market surplus skimmilk. In certain sections, at least, the skimmilk can be used to advantage by keeping it on farms for feeding poultry, hogs, and raising calves. The extent to which this commodity is manufactured will depend on farming practices of the region, trends in creamery management, and profit derived from the business.

APPENDIX I—Dairy Cows Milked, Idaho, on January 1, of Census Years 1910, 1920, and 1925; and Dairy Heifers as of January 1, Census Years 1920 and 1925, by Counties.*

	Dairy cows milked as of Jan. 1.			Dairy heifers as of Jan. 1.	
County	1910	1920	1925	1920	1925
Ada	1,663	10,307	12,580	2,831	3,336
Adams	———	1,030	1,330	500	219
Bannock	5,035	6,344	6,182	1,351	1,094
Bear Lake	4,329	2,585	2,574	586	810
Benewah	———	1,548	812	228	208
Bingham	4,084	5,537	6,103	1,438	1,577
Blaine	1,794	1,342	957	233	222
Boise	2,006	216	308	78	59
Bonner	1,513	2,619	2,615	614	679
Bonneville	———	3,824	3,297	943	759
Boundary	———	603	869	148	241
Butte	———	990	781	261	240
Camas	———	491	757	134	166
Canyon	4,305	9,295	14,216	2,365	3,810
Caribou	———	919	790	219	252
Cassia	2,299	3,728	4,978	702	795
Clark	———	496	293	120	64
Clearwater	———	422	700	92	126
Custer	250	983	811	86	190
Elmore	612	720	637	187	116
Franklin	———	4,217	4,759	1,136	1,335
Fremont	7,714	2,824	2,744	637	657
Gem	2,974	2,127	2,400	541	602
Gooding	———	3,056	5,162	759	1,269
Idaho	———	3,010	1,894	496	359
Jefferson	1,943	2,665	3,118	716	899
Jerome	———	1,560	3,747	378	1,071
Kootenai	———	3,444	3,100	869	701
Latah	4,132	3,971	2,112	965	465
Lemhi	618	1,537	1,567	327	266
Lewis	———	729	1,294	119	224
Lincoln	1,210	1,243	2,038	451	456
Madison	———	2,295	2,694	534	663
Minidoka	———	2,427	3,612	567	881
Nezperce	3,326	3,011	2,191	650	440
Oneida	3,216	2,111	1,208	304	312
Owyhee	237	1,124	1,888	191	421
Payette	———	3,133	3,100	787	745
Power	———	1,463	2,022	337	337
Shoshone	576	595	481	135	76
Teton	———	3,089	2,700	731	839
Twin Falls	1,614	6,962	9,809	1,775	3,005
Valley	———	1,163	1,968	277	529
Washington	2,643	3,581	4,088	818	923
State	58,093	115,336	131,295	27,616	32,418

*U. S. census reports.

APPENDIX II—Milk Production, Idaho, 1909, 1919 and 1924, Census Years, by Counties (gallons)*

County	1924	1919	1909
Ada	7,582,296	5,065,218	1,027,199
Adams	906,626	603,266	—
Bannock	3,380,460	2,481,872	1,845,625
Bear Lake	1,603,756	1,317,412	1,078,053
Benewah	620,065	651,405	—
Bingham	2,963,601	2,283,112	1,324,380
Blaine	691,544	530,191	465,112
Boise	263,952	277,848	639,333
Bonner	1,539,564	1,398,818	565,225
Bonneville	2,123,559	1,370,220	—
Boundary	423,632	302,927	—
Butte	728,028	453,784	—
Camas	582,263	429,585	—
Canyon	8,591,022	4,141,711	2,071,969
Caribou	514,352	441,271	—
Cassia	2,675,215	1,668,762	595,475
Clark	399,000	239,831	—
Clearwater	433,263	242,296	—
Custer	867,216	506,028	93,180
Elmore	527,395	356,721	232,674
Franklin	2,807,346	2,044,794	—
Fremont	1,485,855	988,760	2,383,772
Gem	1,550,745	1,063,537	—
Gooding	3,085,182	1,518,235	—
Idaho	1,443,458	1,455,882	881,496
Jefferson	1,612,300	985,507	—
Jerome	2,220,530	902,220	—
Kootenai	1,745,575	1,617,871	828,436
Latah	1,919,808	1,603,007	1,638,731
Lemhi	861,441	623,696	197,335
Lewis	856,080	505,682	—
Lincoln	1,122,920	470,450	440,323
Madison	1,606,468	1,168,678	—
Minidoka	1,944,608	1,276,616	—
Nezperce	1,309,710	1,152,123	1,196,420
Oneida	987,835	742,282	1,340,161
Owyhee	1,182,852	533,715	81,371
Payette	1,727,703	1,424,405	—
Power	881,496	644,766	—
Shoshone	313,754	328,935	273,585
Teton	1,196,688	1,000,098	—
Twin Falls	5,397,138	3,426,081	744,705
Valley	1,180,872	532,075	—
Washington	2,647,789	1,593,805	916,872
State	78,505,003	52,365,498	20,861,072

*U. S. census reports.

APPENDIX III—Average Production of Milk per Dairy Cow, Gallons, 1909, 1919 and 1924, Census Years by Counties*

County	1924	1919	1909
Ada	582	480	617
Adams	434	454	—
Bannock	515	363	366
Bear Lake	508	356	249
Benewah	535	382	—
Bingham	477	399	324
Blaine	466	355	—
Boise	376	509	318
Bonner	556	500	373
Bonneville	429	316	—
Boundary	464	431	—
Butte	567	422	—
Camas	473	448	—
Canyon	594	434	481
Caribou	527	382	—
Cassia	479	382	259
Clark	420	314	—
Clearwater	417	297	—
Custer	534	436	372
Elmore	473	361	380
Franklin	570	483	—
Fremont	477	324	309
Gem	547	451	357
Gooding	589	470	—
Idaho	314	347	—
Jefferson	460	359	—
Jerome	589	571	—
Kootenai	533	451	—
Latah	528	385	396
Lemhi	381	369	319
Lewis	492	341	—
Lincoln	536	366	364
Madison	538	464	—
Minidoka	536	510	—
Nezperce	447	352	359
Oneida	435	338	416
Owyhee	522	438	343
Payette	549	447	—
Power	424	383	—
Shoshone	614	545	—
Teton	428	308	—
Twin Falls	534	475	—
Valley	568	403	—
Washington	563	418	346
State	517	414	365

*U. S. census reports.

APPENDIX IV—Licensed Creameries* Now Operating in Idaho, 1927

Armour creameries	Pocatello
Blackfoot Creamery	Blackfoot
Boundary Creamery	Bonners Ferry
Clearwater Creamery	Lewiston
Coeur d'Alene Creamery	Coeur d'Alene
**Dairymen's Cooperative Creamery	Caldwell
L. J. Durant Creamery	Grace
**Farmers Cooperative Creamery	Payette
**Farmers Cooperative Creamery	Weiser
Gem Creamery Co.	Emmett
**Gooding Cooperative Creamery	Gooding
Idaho Creamery	Rupert
Idaho Creamery Co.	Boise
Idahome Creamery	Preston
Idaho Creamery	Blackfoot
Jensma Creamery	Nampa
**Jerome Cooperative Creamery	Jerome
H. F. Laabs Co.	Blackfoot
Lincoln Produce & Refrigerating Co.	Twin Falls
**Malad Valley Creamery	Malad
Moscow Creamery	Moscow
Mutual Creamery	Boise
Mutual Creamery	Lewiston
Mutual Creamery	Pocatello
**Nampa Cooperative Creamery	Nampa
New Purity Creamery	Moscow
Orofino Creamery	Orofino
Pend d'Oreille Creamery	Sandpoint
Salmon Creamery	Salmon
Smith's Creamery	Blackfoot
Smith's Creamery	Cottonwood
Smith's Creamery	St. Maries
Sunnyside Dairy Products Co.	Idaho Falls
Swift & Company	Caldwell
Swift & Company	Twin Falls
Swift & Company	Weiser

*As reported by Idaho State Department of Agriculture.

**Cooperative.

APPENDIX V—Licensed Cheese Factories* Now Operating in Idaho, 1927

**Cassia Cheese and Produce Co.	Oakley
Clifton Cheese Factory	Clifton
Downey Cheese Factory	Downey
Hazelton Cheese Factory	Hazelton
Jensma Creamery	Nampa
Joss Brothers	Grandview
H. F. Laabs Cheese Co.	Aberdeen
H. F. Laabs Cheese Co.	Albion
H. F. Laabs Cheese Co.	Arco
H. F. Laabs Cheese Co.	Blackfoot
H. F. Laabs Cheese Co.	Burley
H. F. Laabs Cheese Co.	Firth
H. F. Laabs Cheese Co.	Grace
H. F. Laabs Cheese Co.	Darlington
H. F. Laabs Cheese Co.	Idaho Falls
H. F. Laabs Cheese Co.	Louisville
H. F. Laabs Cheese Co.	Malta
H. F. Laabs Cheese Co.	Moreland
H. F. Laabs Cheese Co.	Paul
H. F. Laabs Cheese Co.	Rigby
H. F. Laabs Cheese Co.	Ririe
H. F. Laabs Cheese Co.	Rockland
H. F. Laabs Cheese Co.	Rupert
Lava Hot Springs Cheese Co.	Lava Hot Springs
Malad Valley Creamery (cooperative)	Malad
McCammon Cheese Factory	McCammon
Mutual Creamery	Geneva
Mutual Creamery	Georgetown
Mutual Creamery	Irwin
Mutual Creamery	Paris
Nelson Ricks Creamery	Rexburg
Nelson Ricks Creamery	Driggs
Nelson Ricks Creamery	Hagerman
Nelson Ricks Creamery	Hibbard
Nelson Ricks Creamery	St. Anthony
Nelson Ricks Creamery	Sugar City
Nelson Ricks Creamery	Victor
Sego Milk Products Co.	Buhl
Snake River Dairy Products (cooperative)	Rexburg
Swauger Land & Livestock Co.	Mackay
**Teton Valley Swiss Cheese Co. (cooperative)	Tetonia
Three Star Dairy	Bern
**West Point Cheese Co. (cooperative)	Wendell

*As reported by Idaho State Department of Agriculture.
**Operating but not yet licensed.

APPENDIX VI—Licensed Ice Cream Factories* Now Operating in Idaho, 1927

Bluebird Confectionery	Montpelier
Boise Ice Cream Co.	Boise
Boise Valley Cooperative Creamery	Boise
Boundary Creamery	Bonners Ferry
Burley Ice & Cold Storage	Burley
Clearwater Creamery Co.	Lewiston
Coeur d'Alene Creamery	Coeur d'Alene
Dairymen's Cooperative Creamery	Caldwell
Farmer's Cooperative Creamery	Payette
Gem Creamery	Emmett
Idaho Creamery	Boise
Jensma Creamery	Nampa
Jerome Cooperative Creamery	Jerome
Lincoln Produce Co.	Twin Falls
Moscow Creamery	Moscow
Mutual Creamery	Boise
Mutual Creamery	Lewiston
Mutual Creamery	Pocatello
Nampa Cooperative Creamery	Nampa
New Purity Creamery	Moscow
Orofino Creamery	Orofino
Peerless Ice Cream Co	Pocatello
Pend d'Oreille Creamery	Sandpoint
Salmon Creamery	Salmon
Smith's Creamery	St. Maries
Sunnyside Dairy Products Co.	Idaho Falls
Weiner Ice & Cold Storage	Weiser

*As reported by the Idaho State Department of Agriculture.

APPENDIX VII—Creamery Butter: Production by Divisions and Specified States, 1920-1925*

Division and state	1920 1,000 pounds	1921 1,000 pounds	1922 1,000 pounds	1923 1,000 pounds	1924 1,000 pounds	1925 1,000 pounds	Percent (1925 of 1920)
United States	863,577	1,054,938	1,153,515	1,252,214	1,356,080	1,361,526	158
North Atlantic	46,927	60,221	55,793	47,906	54,908	41,363	88
North central	645,492	796,881	886,429	960,126	1,044,601	1,071,272	166
South Atlantic	5,225	6,333	7,532	9,275	9,786	9,098	174
South central	35,923	46,911	50,008	56,455	59,993	59,325	165
Mountain	30,101	37,265	42,415	51,715	60,959	60,849	202
Pacific	99,909	107,327	111,338	126,737	125,833	119,619	120
Mountain states							
Montana	5,168	7,429	7,713	10,667	13,874	13,968	270
Idaho	4,660	4,935	7,582	9,883	15,431	15,101	324
Wyoming	875	1,277	1,403	1,894	1,941	1,999	228
Colorado	12,979	15,290	16,410	18,625	18,130	18,794	145
New Mexico	6	29	129	185	251	326	5,433
Arizona	828	1,358	623	600	2,107	1,034	125
Utah	3,567	4,549	5,913	7,500	8,585	7,034	197
Nevada	2,018	2,388	2,642	2,361	2,640	2,593	128
Pacific states							
Washington	23,751	23,228	24,239	26,666	29,331	25,673	108
Oregon	14,288	15,289	17,158	18,128	20,993	21,575	151
California	61,870	68,810	69,941	81,943	75,509	72,371	117

*Taken from Byron Hunter's report.—Statistics of the Dairy Industry with Special Reference to the Eleven Western States. Published by Bureau of Agricultural Economics, U. S. D. A.

APPENDIX VIII—Cheese Production by Divisions and Specified States, 1920-1925* (Total Cheese not Including Cottage, Pot, and Bakers)*

Division and state	1920 1,000 lb	1921 1,000 lb	1922 1,000 lb	1923 1,000 lb	1924 1,000 lb	1925 1,000 lb	Percent (1925 of 1920)
United States	351,506	352,650	365,316	390,425	409,865	443,514	126
North Atlantic	59,561	64,305	72,538	59,823	63,010	64,631	109
North central	269,624	263,911	265,474	304,350	315,671	346,702	129
South Atlantic	372	307	265	278	279	155	42
South central	26	104	129	335	437	367	1,412
Mountain states	4,278	5,443	10,539	10,353	13,548	14,417	337
Pacific states	17,645	18,580	16,371	15,286	16,920	17,242	98
Mountain							
Montana	266	196	322	726	972	1,365	513
Idaho	1,727	2,117	3,368	5,316	7,670	7,423	430
Wyoming	1,180	1,543	3,416	1,791	1,945	1,923	163
Colorado	106	85	69	162	469	1,288	1,215
New Mexico	——	——	74	135	92	56	——
Arizona	150	450	47	84	159	543	3,362
Utah	849	1,027	3,219	2,139	2,162	1,753	206
Nevada	——	25	24	——	79	66	——
Pacific states							
Washington	1,444	2,130	3,146	3,062	3,264	3,389	235
Oregon	8,482	8,900	8,852	7,816	10,073	10,030	118
California	7,719	7,550	4,373	4,408	3,583	3,823	50

*This table includes—

American cheese—
Whole milk
Part skim
Full skim

Swiss cheese (including block)
Brick and Munster cheese
Limburger cheese
Cream and neufchatel cheese
All Italian varieties.

All other varieties.

*Same as previous page.

APPENDIX IX—Freight Rates Per 100 Pounds and Refrigeration Charges Per Car on Butter and Cheese, May, 1926*

From	To	Carlots		Less than carlot
		Freight rate (cents)	Refrigeration charge (dollars)	Freight rate (cents)
San Francisco	New York (import rate (1)	230	90	480
San Francisco	" "	300	90	480
Portland	" "	300	90	480
Seattle	" "	300	90	480
Boise	" "	300	80	486½
Salt Lake City	" "	300	(2)	459½
Denver	" "	261½	(2)	345
San Francisco	Chicago (import rate (1)	230	75	443
San Francisco	"	300	75	443
Portland	" (import rate(1)	230	75	443
Portland	"	300	75	443
Seattle	"	300	75	443
Boise	"	295½	65	362
Salt Lake City	"	225	(2)	335
Denver	"	167	(2)	220½
New York	San Francisco	300	(2)	480
Chicago	" "	300	(2)	443
Denver	" " (3)	261½	(2)	317
Salt Lake City	" "	137½	(2)	184½
Boise	" "	164	55	284
Twin Falls	" "	162	50	277
Portland	" "	58	(2)	58
New York	Portland	300	(2)	480
Chicago	"	300	(2)	443
Boise	"	115	35	155

Statistical and historical research division, U. S. Bureau of Agricultural Economics.

NOTE: No refrigeration rates are given for less than carlot shipments.

(1) There are no special rates on shipments of imported butter and cheese from New York to the Pacific coast.

(2) No specific thru refrigeration charge.

(3) The freight rate on carlot shipments of cheese from Denver to San Francisco is 230 cents per 100 pounds.

*Same as previous page.