



Marketing milk in Montana
by Helmer C Holje

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Economics
Montana State University
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Abstract:

Montana, overall, is a surplus producing area of dairy products.

Large amounts of butter and cheese are being shipped to the urban markets of other regions. Yet, many markets of the state do not have an adequate supply of quality milk to meet year around consumer demands. The deficit areas exist not because the overall production of the area is low, but because the type of production and marketing of milk does not permit the supply to be available to the non-producer.

This problem has become increasingly acute the past decade, during which time a large shift in cow numbers has taken place from the plains region to the more favorable producing areas of the mountain region. This shift has been accentuated by favorable crop producing conditions and cityward migration of our population in the plains region. Feasible means to alleviate these shortages have not been accessible to the smaller markets until only recently. Today, with the advent of the one-trip paper carton and refrigerated truck, milk of high quality can be shipped to all areas of the state. No single marketing process has so completely revolutionized our milk industry as that of the paper carton.

Significant determinations of this study includes (1) Milk production in Montana exhibits pronounced seasonal fluctuations. In 1948 milk production ranged from a low of 36 million pounds to a high of 74 million pounds.

(2) In 1944 producers in the eastern districts retained 50 per cent of their production for farm use, selling 10 per cent as whole milk and 40 per cent in the form of butterfat. Producers in the western districts kept 20 per cent of their production for farm use, selling 38 per cent as whole milk and 42 per cent as butterfat.

(3) A complete reorganization of our present Milk Control Board pricing system appears inevitable if it is to adequately serve the needs of the dairy industry.

(4) Unlike other sectors of the United States, the shortage of a high quality supply rather than consumer income, is the ranking restrictive factor to increasing milk consumption in Montana.

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Recognition is also due the Montana Milk producers and distributors, the Montana Milk Control Board, and Mr. P. J. Creer, State Statistician, for their cooperation and advice in this study.

MARKETING MILK IN MONTANA

ABSTRACT

Montana, overall, is a surplus producing area of dairy products. Large amounts of butter and cheese are being shipped to the urban markets of other regions. Yet, many markets of the state do not have an adequate supply of quality milk to meet year around consumer demands. The deficit areas exist not because the overall production of the area is low, but because the type of production and marketing of milk does not permit the supply to be available to the non-producer.

This problem has become increasingly acute the past decade, during which time a large shift in cow numbers has taken place from the plains region to the more favorable producing areas of the mountain region. This shift has been accentuated by favorable crop producing conditions and cityward migration of our population in the plains region. Feasible means to alleviate these shortages have not been accessible to the smaller markets until only recently. Today, with the advent of the one-trip paper carton and refrigerated truck, milk of high quality can be shipped to all areas of the state. No single marketing process has so completely revolutionized our milk industry as that of the paper carton.

Significant determinations of this study include:

(1) Milk production in Montana exhibits pronounced seasonal fluctuations. In 1948 milk production ranged from a low of 36 million pounds to a high of 74 million pounds.

(2) In 1944 producers in the eastern districts retained 50 per cent of their production for farm use, selling 10 per cent as whole milk and 40 per cent in the form of butterfat. Producers in the western districts kept 20 per cent of their production for farm use, selling 38 per cent as whole milk and 42 per cent as butterfat.

(3) A complete reorganization of our present Milk Control Board pricing system appears inevitable if it is to adequately serve the needs of the dairy industry.

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PART I. INTRODUCTION

Preface

The dairy industry is one of the oldest and most important branches of farming in this country. Next to bread and water, milk is used more commonly than any other food or drink.^{1/} Yet, nutritionists have estimated that the per capita consumption of milk and its products should be increased 80 per cent to meet the needs of a moderate-cost diet.^{2/} A growing recognition of the dietetic value of milk has resulted in considerable public interest in the milk industry. Early manifestations of this interest were focused largely on sanitation. Many laws and regulations have been formulated to attempt to assure the consumer that a high-quality product would be forth-coming. More recently, however, the pricing of milk and regulation of the market have attracted an increasing amount of public interest.

Great strides have been made in improving the sanitary production and processing, and economic distribution, resulting in more efficient use of our economic resources and in turn supplying the consumer with a higher quality product at a lower relative cost. For such the dairy industry must be commended.

However, our attention has been largely focused on the milk supply and price problems of the urban market. Little concern has been given to the sparsely populated regions. The milk problem was not thought to

^{1/} Dairy Industry, Encyc. Amer., Vol. 8, p. 403.

^{2/} Bartlett, Roland W., The Milk Industry, p. 165.

be serious when most of the population lived on farms or in small towns and villages. It was felt that an ample supply of quality milk could be provided by the "family cow" or easily obtained from nearby producers.^{3/} Only recently has the milk problem in the sparsely populated areas been realized.

In a democracy this is as it should be, the majority rule and their wishes come first. This does not mean, however, that the minority should be neglected. That our government realizes this, is exemplified by the fact that research projects have been initiated to alleviate the existing problems of these peoples and assure all segments of our population a supply of dairy products, incorporating stability, quality, and quantity, at a reasonable price.

The Situation

An interesting paradox exists in the dairy industry of Montana. In 1947, Montana produced 1,283 pounds of milk per capita, while the United States per capita production and consumption was 837 pounds.^{4/} Thus, Montana produced a surplus 64 per cent above the consumption of the average American consumer. However, in a recent analysis of Montana milk markets it was stated, "one of the most significant findings of this study was that most market areas did not have a stable and adequate supply of milk during the entire year."^{5/} In many cases the shortage

^{3/} Milk Supply, Encyc. Soc. Sciences, p. 475.

^{4/} U.S.D.A., Agricultural Statistics, 1947, p. 380.

^{5/} Korzan, Gerald E., Cost of Distributing Milk in Montana Markets, p. 39.
(Underlinings are the author's.)

was very acute and necessitated in-shipments from other states.

Market regulation, discriminatory freight rates, lack of organization and concentration of producers and distributors, inadequate market information, inertia among producers and distributors, and inadequate marketing facilities are among the factors contributing to this situation. The results are more easily discernible and in essence are: 1. Producers and distributors are not maximizing returns on their investments, and 2. The consumer in many localities receives an insufficient, unstable, and inferior milk supply.

Normally we would expect to find a third result--that of higher relative price. One commonly associates relatively high prices with deficit products, be it through the free forces of supply and demand or by a "regulated" or "negotiated" price. However, an analysis of Montana milk markets indicates that a situation quite the contrary to this exists. In an overall comparison, it will be found that milk prices ranged from 16 to 20 cents per quart in Montana milk markets and in 24 urban markets of the United States the price averaged 20.5 cents per quart for the same period.^{6/} A further breakdown of State markets reveals that in many deficit areas the price per quart is as low, or lower, than in known surplus markets.

One may then rightfully ask, "Is our pricing mechanism doing its job? How, in our capitalistic economy where supply and demand are the

^{6/} Korzan, Gerald E., Unpublished Paper, Montana State College, 1949.

price regulators, can we justify the association of a low relative price with a deficit supply?"

No "cut and dried" remedies for this situation are offered but rather, suggestive plans of improvement that may serve as a basis for formulating procedures and techniques that will in time alleviate the existing situation are presented.

Objectives

The author, and several others, who are or have been associated with the dairy industry of Montana and similar areas in the sparsely populated regions, feel that a definite problem exists. It is not merely a figment of the imagination. Substantive evidence has been procured to verify the validity of such thinking.

Several pre-suppositions have been made to ground the "ideas" developed in this thesis. These are, that peoples of the sparsely populated regions do desire dairy products incorporating low price and a supply having stability, quality and quantity. These pre-suppositions seem to be so pervasive and obvious that any dispute over their 'trueness' would be pedantic. Thus there seems no reason to believe that these pre-suppositions will invalidate our problem.

The objectives of this study resolve themselves into two distinct purposes: 1. To discover, assemble, and disseminate information relative to the characteristics common to and peculiar to the dairy enterprise of Montana. 2. To discover and develop suggestive plans of improvement that

may serve as a basis for further research, which will ultimately result in maximization of returns to the dairy industry and furnish the consumer a desired product.

Qualifications of the Data

A limited amount of primary data was obtained for determining the characteristics of all phases of the dairy enterprise in Montana covered in this thesis. Secondary data were used extensively to "fill the gap" where primary data was lacking and give balance to the study.

The author prepared and collected the schedule used in determining production characteristics.^{7/} It was largely of a psychological nature and was designed primarily to secure the reactions of the producer toward regulation in the milk industry, contemplated plans for the future, reasons for being in dairying, and listening to general comments that each individual dairyman might have.

Because a study of this type has definite limitations, schedules were secured only from two selected counties. Those chosen were thought to portray the greatest divergence of characteristics in the dairy enterprise.

This schedule was pre-tested before using it in the field and the weaknesses detected were corrected. Yet, the schedule proved not to be infallible and it was necessary to omit, change, and add to it in the field. In fact, many of the most significant data are the inserted notations on the margins.

^{7/} See Exhibit 1, Appendix.

The author participated in a recent cost of milk distribution survey and thereby had access to much primary data pertinent to the characteristics of the other phases of the dairy enterprise analyzed in this study.^{8/} Likewise personal interviews by the author of some of the milk distributors made first-hand observation of their operations possible and has proven to be invaluable.

Method of Analysis

Two related but dissimilar methods of analysis will be used in this study. One is purely of a descriptive nature and will serve to give a wider perspective of the situation and problem. Data were synthesized to give congruity of presentation and thus prove most useful for use in further research.

The second method used was entirely theoretical. A hypothetical marketing system was developed which conceivably could alleviate the existing situation. Because of study limitations only those issues deemed most fundamental have been presented.

In this thesis presentation frequency distributions, charts, diagrams, graphs, and arithmetic averages have been used extensively to facilitate comparisons and analogies.

^{8/} This survey is referred to in footnote 7.

PART II. CHARACTERISTICS OF THE DAIRY ENTERPRISE IN MONTANA

Introduction

"A chain is no stronger than its weakest link." To ascertain the strength of the "chain" in its entirety it becomes necessary to examine each and every "link" individually. So be it with our milk marketing mechanism. One cannot determine its full value unless every function is examined. Likewise, the more precise and deliberate the analysis, the more exacting will be the final conclusion.

The analysis was begun by describing the characteristics which are common and peculiar to the dairy enterprise in Montana. This enables one to establish a concrete foundation from which corrective measures may arise and thus instill economic progress into our milk marketing structure.

Production

General Characteristics. Of the eleven western states,^{2/} Montana, in 1947, ranked second only to Idaho in production of milk per capita. (Table I). Also Montana, even with a relatively low per-cow production, is one of three western states where production per capita is on the increase. (Table I).

Figure 1 shows that dairying contributes a significant share of the gross value of agricultural production in Montana. The annual return from dairying exhibits much stability and has proven invaluable to the farmer and rancher in "weathering" and adverse economic cycles.

^{2/} Idaho, Montana, Wyoming, Utah, Washington, Oregon, Colorado, Nevada, California, New Mexico, Arizona.

Table I. Total Production of Milk in Selected Groups of Western States, Average Per Capita, and Related Data, for 1940 and 1947.

State and Division	Total Production on farms, 1940		Population		Production per Capita		Decrease or Increase Per Capita	Prod. per Milk Cow 1947
	1940	1947	1940	1947	1940	1947		
	Million pounds		Thousand Persons		Pounds		Pounds	
Far western:								
Idaho	1,228	1,271	525	488	2,339	2,604	265	6,110
Arizona	232	260	500	657	464	396	- 68	5,900
Utah	550	657	550	637	1,000	1,031	31	6,200
Nevada	106	100	110	140	963	714	- 249	5,870
Washington	2,001	2,058	1,736	2,233	1,152	921	- 231	6,450
Oregon	1,394	1,351	1,090	1,517	1,278	891	- 387	5,900
California	4,893	5,996	6,907	9,876	708	607	- 101	7,190
Total	<u>10,404</u>	<u>11,693</u>	<u>11,418</u>	<u>15,548</u>				
Per Capita for division					911	752	- 159	
Mountain States:								
Montana	688	634	560	494	1,228	1,283	55	4,880
Wyoming	292	297	250	275	1,168	1,080	- 88	5,120
Colorado	1,016	1,000	1,123	1,159	904	862	- 42	5,000
New Mexico	287	238	532	550	539	433	- 106	4,100
Total	<u>2,283</u>	<u>2,169</u>	<u>2,465</u>	<u>2,478</u>				
Per Capita for division					926	875	- 51	5,702

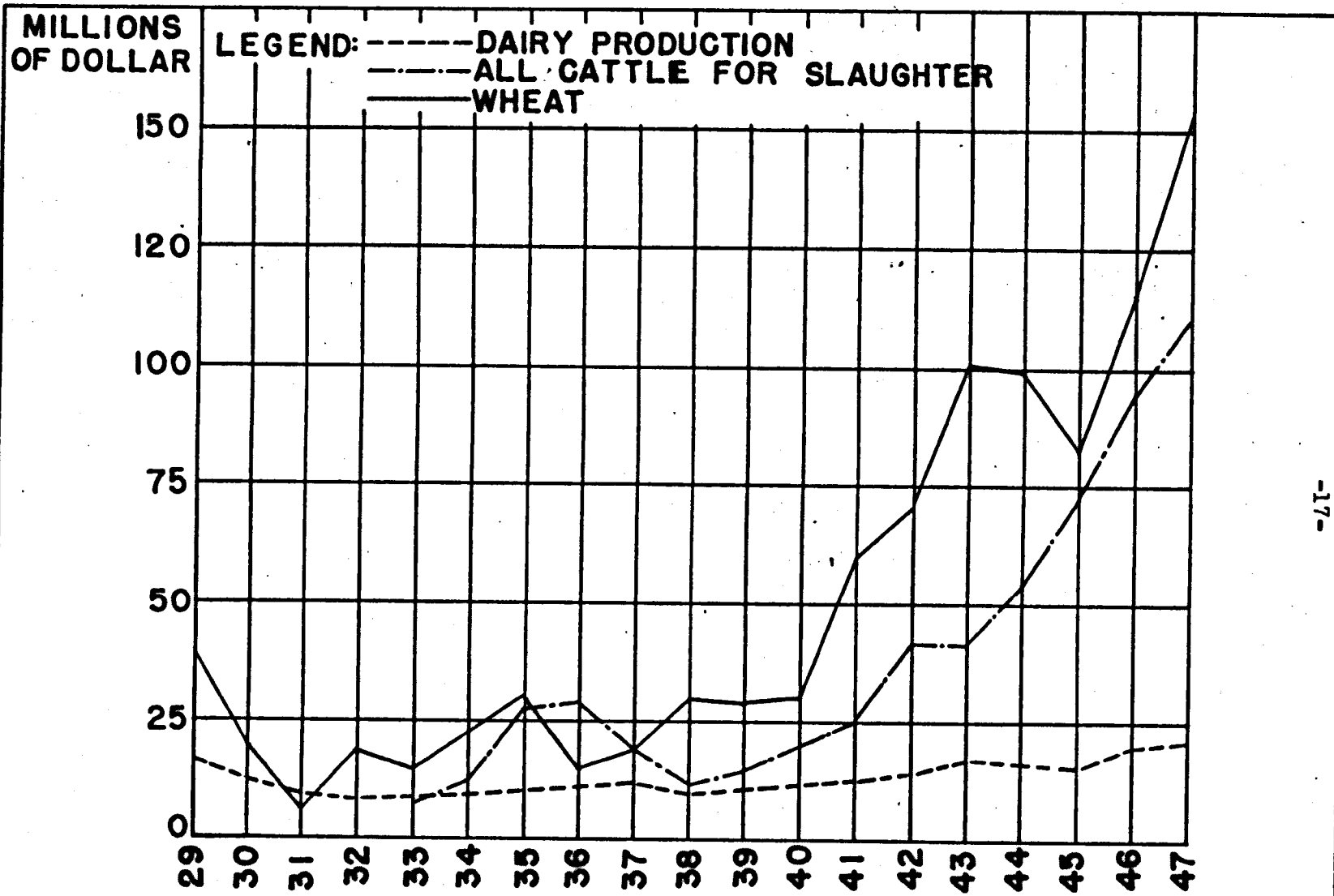


FIG. I GROSS VALUE OF SELECTED FARM PRODUCTS, MONTANA, 1929-1947.

SOURCE: APPENDIX TABLE I

However, what is more important is the type, availability, and utilization of the given production. In Table II is shown the number of gallons of milk long and short per day in each district if we were to make a uniform distribution of the total farm sales of whole milk in Montana among the non-farm population.^{10/} The amount available to the non-farm population would then approximate one pint per day per capita. This is comparable to the daily national per capita consumption.

To facilitate such a distribution it may readily be seen that considerable movement of milk would be necessary. The feasibility of this will be explored later. Montana is a deficit area for fluid milk under our present day marketing system. It is only in the western portion and local areas of other districts that an adequate supply of fluid milk is available.

The deficit areas exist not because the overall production of the area is low, but because the type of production and marketing of milk does not permit the supply to be available to the non-producer.

This is well typified by many of the farmers of the sparsely populated regions who produce milk only because of necessity. With the present day inadequacies so prevalent in our milk marketing structure, production for self remains the only alternative to many as a source of supply, (Figure 5). Our milk marketing techniques are not geared to the

^{10/} This base was primarily used to determine the degree of self-sufficiency among districts. Because it approximates the national per capita consumption figure it may also be used as a standard of comparison for each district. It has been recognized earlier in the text that this figure is too low from a nutritional standpoint.

Table II. Surplus and Deficit Fluid Milk Areas*, By Crop Reporting Districts, Montana, 1939**, 1944**, and 1947***.

District	Year	Surplus (gallons)	Deficit
1	1939	3,908	
	1944	9,424	
	1947	11,722	
2	1939		1,075
	1944		1,183
	1947		1,828
3	1939		926
	1944		2,492
	1947		2,677
4	1939		1,475
	1944		3,183
	1947		4,025
5	1939	419	
	1944	0	
	1947		210
6	1939		461
	1944		1,810
	1947		1,996
7	1939		379
	1944		853
	1947		900
TOTAL		25,473	25,473

Source: U.S. Census of Agriculture, 1940, 1945; Montana Agricultural Statistics, 1948.

*This table represents the gallons in surplus or deficit by districts if a uniform distribution were made of the whole milk farm sales for each given year among the non-farm population. The following figures represent what the average non-farm person would receive for each of the years listed in Montana: 1939 - 31 gallons, 1944 - 46 gallons, and 1947 - 44 gallons. Comparable figures for the United States are: 1939 - 53 gallons and 1944 - 75 gallons.

**Actual production figures taken from the U.S. Census of Agriculture.

***Projected figures based on estimated cow number changes as taken from Montana Agricultural Statistics, 1948.

era of specialization in the sparsely populated regions and the law of "comparative advantage" becomes limited in its use. Inefficient use of our economic resources and "excess waste" of the given product becomes a logical result.

Specific characteristics of production which seem to be most pertinent to this study will next be analyzed in detail. The first part of the discussion will be concerned with physical characteristics in which numerical and graphic comparisons are expedient. In the second part, psychological characteristics will be described.

Concentration. Figures on concentration of milk production in local areas in various districts, which are the only specific indicators of concentration, are not available for this study. General comparisons by districts are shown in Table III.^{11/} Concentration comparisons by districts are dangerous, even when used with care. A heavy local concentration is possible even in districts of relatively low concentration. This is particularly true in districts where scattered irrigation developments are prevalent. Yet, if one is cognizant of the shortcomings of general comparisons, they may be used to broaden one's perspective. Where general concentration is high, the probability of local concentration runs high; and, conversely, where general concentration is low, the probability of local concentration runs low.

Table III shows that nowhere in the plains area is there a general concentration of one milk cow per square mile. In the West, general

^{11/} See Figure 2 for the district breakdown.

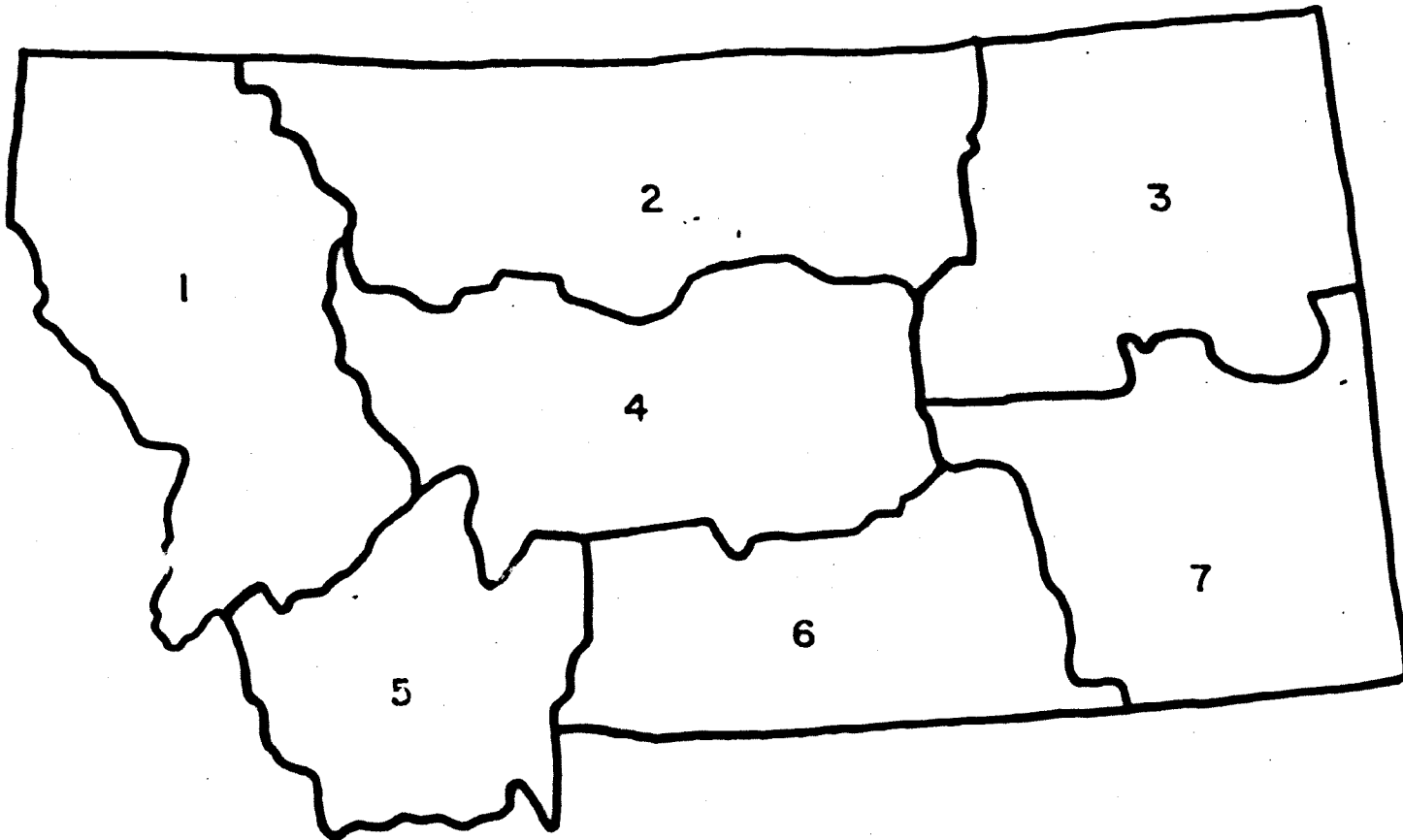
Table III.* Milk Cow Numbers, Cows Per Farm, Cows Per Square Mile, Persons Per Cow, Production Per Cow, Production Per Capita, and Related Data, Montana, 1939**, 1944**, & 1949***.

District	Year	Number Milk Cows*	Cows Per Farm*	Cows Per Square Mile	Acres in farm per cow	Gallons Per Sq. Mile	Persons per Cow	Average Product. Per Cow (Gals.)	Production per Capita (Gals.)
1	1939	31672	5.3	1.3	87	835	3.8	642	170
	1944	33878	6.2	1.4		842	3.5	602	170
	1949	35335		1.5		948		632	186
2	1939	17484	3.4	.7	635	348	4.0	497	125
	1944	16301	3.4	.6		340	4.3	558	130
	1949	11981		.4		234		586	101
3	1939	16895	3.4	.8	436	384	3.7	480	129
	1944	17674	3.7	.8		347	3.5	441	124
	1949	13396		.6		278		463	99
4	1939	17580	4.5	.8	478	390	5.6	556	99
	1944	17180	4.4	.8		441	5.8	565	98
	1949	13074		.6		356		593	78
5	1939	15275	6.6	1.1	219	670	5.9	609	103
	1944	13981	6.2	1.0		657	6.5	656	102
	1949	12541		.9		620		689	96
6	1939	21566	4.5	1.3	294	727	4.0	559	140
	1944	22139	4.9	1.3		698	3.9	536	137
	1949	19062		1.1		619		563	125
7	1939	9349	3.7	.5	761	222	3.4	444	131
	1944	9350	3.6	.5		216	3.4	455	134
	1949	7780		.4		191		478	118
Mont.	1939	129821	4.4	.9	358	502	4.3	558	130
	1944	130503	4.6	.9		494	4.3	554	129
	1949	110145		.8		466		582	115

* All references to "cows" is to "cows" used for milk.

** Calculations based on, Montana Agricultural Statistics, December 1948.

*** Projected figures based on information secured from BAE farm reporters.



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FIG. 2 DISTRICT BREAKDOWN

concentration is all greater than one milk cow per square mile. Even this cannot be considered heavy compared to concentrated dairy regions, but it does indicate where the heavier concentrations may be found. To support this analysis, three representative dairying counties, Lake, Ravalli, Gallatin, were picked to indicate the amount of local concentration in western Montana. These counties comprise approximately 4 per cent of the land area of Montana and contain 19 per cent of the total dairy cows.^{12/} A further comparison by acres in farms per cow shows a still greater divergence among districts, (Table III).

Thus, it becomes apparent that, save for a few local areas where irrigation developments are prevalent, the concentration of dairying is centered in western Montana in three or four local areas. For the remainder of the state, dairying is widely dispersed.

Milk Produced. Comparisons of per-cow production and per capita production, among districts, have been made. The first is valuable in indicating the relative efficiency of production, and the latter portrays the amount of milk that could be made available for use. Whether it is or should be made available is a question for further study.

It is only in the two western districts that a yearly per-cow production of 600 gallons is reached, (Table III). The two eastern districts are low with a 455-gallon yearly average for the years 1939 and 1944. Percentagewise, the western district's average is 28 per cent greater.^{13/}

^{12/} Computations based on the United States Census of Agriculture, 1945.

^{13/} Computations based on the United States Census of Agriculture, 1940, 1945.

No significant differences are noted in production per capita between the western and eastern sectors. It is true that District I is considerably higher than any other district, but this is offset by the relatively low production per capita of District 5. Only a slight deviation from the mean of the state is shown by the eastern districts for the years 1939 and 1944. But preliminary production figures for District 3 in 1949 indicate a serious per capita production drop, (Table III).

The per capita production has been downward in all districts of the plains area; has remained constant in the southwest district; and has been upward in the northwest district, (Table III). This is a direct result of a change in dairy cow numbers, (Table III). The loss in dairy cow numbers has been most pronounced in the plains districts where favorable weather conditions have accentuated the comparative advantage of crop production. A "cushioning" of the production drop has been effected by an increased per-cow production, but this increase has not been great enough to offset the tremendous cut in cow numbers in the eastern districts, (Table III). Conversely, the west has had an increase in per capita production. Not only through increased per cow production, but through increased cow numbers as well.

These trends are not significant in themselves. Rather, they are significant as a body for they clearly point out the shift of our dairy resources from east to west during the past decade.

Unit Size. In speaking of size, particular reference to the number of producing units, i.e., cow numbers, has been made. Comparisons of

"economies of scale" in dairying are applicable only to producing units. Though land area sets specific limitations on the scale of an enterprise, it is inadequate for unit comparisons because of use intensity.

Cows per farm range from a high of 6.6 in District 5 to a low of 3.4 in Districts 2 and 3. In an east-west comparison, Districts 1 and 5 have an average of 6 cows per farm, and the plains districts have an average of 4 cows per farm, (Table III).

A comparison among Bureau of Agricultural Economics farm reporters in two selected counties shows a still greater divergence between east and west in dairy cows per farm.^{14/} In Ravalli County, farm reporters averaged 8.9 cows per farm in 1948. Cow numbers per crop reporter in Custer County averaged 3.1 in 1948. The percentage change in cows per farm is likewise significant. In Ravalli County the cows per farm were increased 16 per cent from 1947 to 1948. In Custer County a decrease of 16 per cent was noted for the same period, (Table IV).

The foregoing figures have been representative of all cows used in dairying. A comparison of fluid milk producers in Ravalli and Custer counties, who were cooperators in a recent survey, produced similar results.^{15/} Though the unit size is much greater in fluid milk production, the comparative ratio is still roughly two to one, averaging

^{14/} The Bureau of Agricultural Economics have representative farmers to whom they mail questionnaires upon which production estimates are based. These farmers are referred to as farm or crop reporters.

^{15/} Refer to footnote 7.

Table IV. Average Herd Size For Selected Counties

Montana 1947, 1948*

	1948	1947	Percent Change
<u>Ravalli:</u>			
Number Farms	50	50	
Number Cows	444	384	+ 16
Cows Per Farm	8.9	7.7	
<u>Custer:</u>			
Number Farms	30	30	
Number Cows	92	110	- 16
Cows Per Farm	3.1	3.7	

Source: Montana Federal Agricultural Statistical Service; Bureau of Agricultural Economics, USDA, Helena, Montana

* Sample inclusive of BAE Survey.

approximately 20 cows per unit in Ravalli County and 9 cows per unit in Custer County.

Seasonality. Perhaps no other production factor contributing to inefficiency in dairying, not only in production but in processing and distribution as well, has received as little attention as seasonality in production. Only two or three local areas, to the author's knowledge, are initiating measures to "level" seasonal production.

Milk production in Montana in 1948 ranged from a low of 36 million pounds in December to a high of 72 million pounds in June--a change of 100 per cent, (Figure 3).

Production figures by district or county are not available; but present and contemplated breeding plans were asked of the fluid milk producers. In Ravalli County each and every producer interviewed was carrying out breeding practices designed to prevent seasonality. The percentage dropped to 70 per cent in Custer County.

Probably these figures are somewhat higher than is actually the case. People are prone to over-emphasize good practices and under-emphasize the bad. Individual production figures would be the only definite means of ascertaining the amount of seasonality.

"Enterprise Dairying." Of all the varying reasons given to the question, "Why did you choose dairying as an enterprise?" the universal reply was, "It provides a stable income daily." Other reasons given were:

1. Used as a supplementary enterprise and helps to 'round' out my farming operations.
2. Natural love for dairying.
3. A good source for fertil-

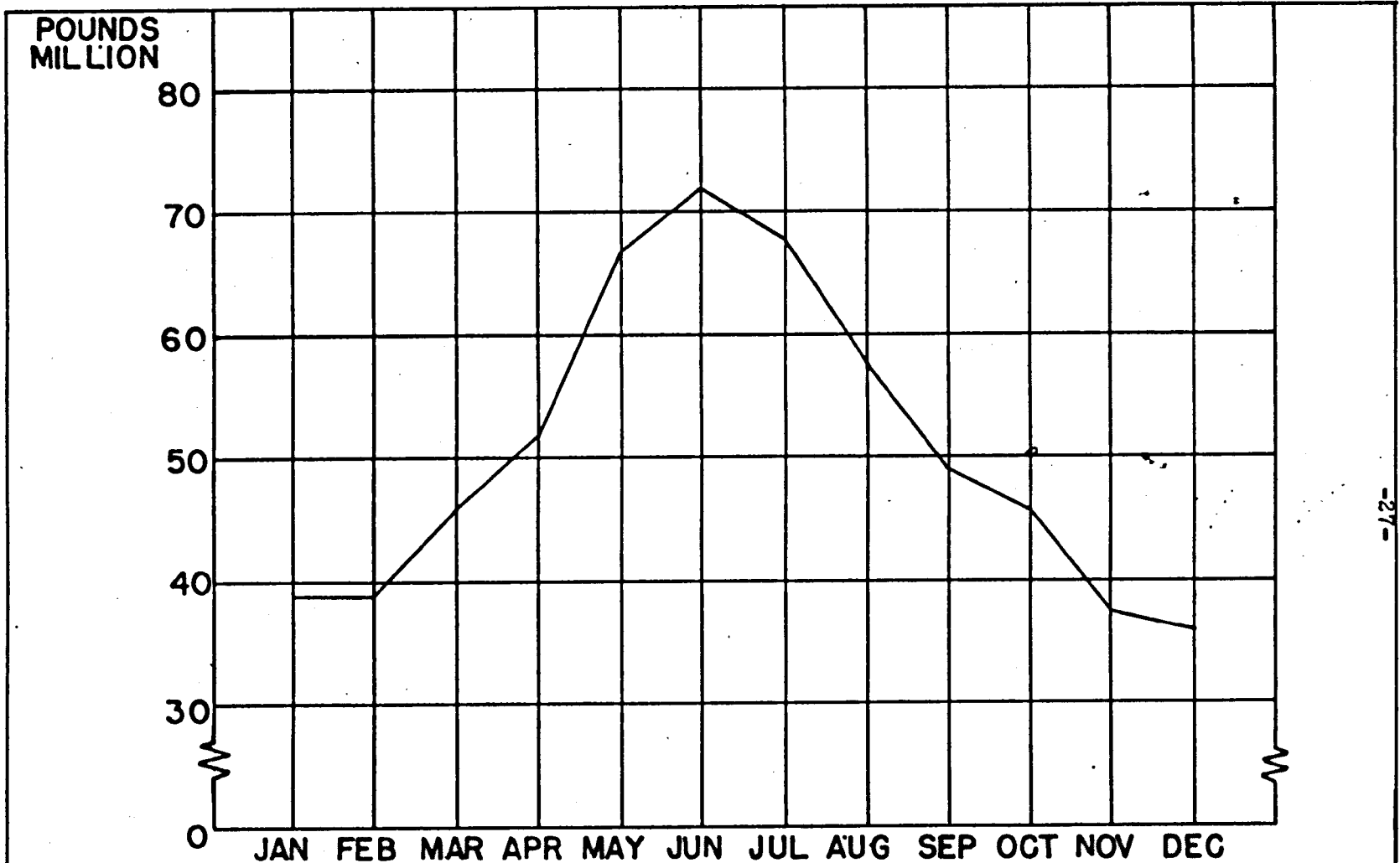


FIG. 3 MILK PRODUCTION IN MONTANA BY MONTHS, 1948.

SOURCE: APPENDIX TABLE II

izer, and 4. Past experience has proven dairying to be the most profitable enterprise in this area.

Reasons for quitting dairying were: 1. Hard steady work, 2. Little profit, 3. Unable to secure labor, 4. Unsatisfactory butterfat tests, 5. Old age, 6. Complete retirement, and 7. Highway construction cut farm into an uneconomic unit.

All producers interviewed favored a continuation of sanitation and price regulation. Most producers were reluctant to express their views on retail price regulation, but supported producer price regulation unani- mously. Likewise, all were in favor of continuing sanitation regulation and none felt that present-day strictures were oppressive. In fact, many felt regulatory boards were too lenient, particularly to distributors who were using class B milk for class A purposes when conditions did not war- rant such a practice. Many felt that sanitation regulations for butterfat production should be invoked. Others felt that compliance costs would force many butterfat producers from production and result in serious shortages of manufactured dairy products.

Apparently management practices promoting efficiency are being used to a greater degree in Ravalli County than in Custer County. All co- operators in Ravalli County had an up-to-date production record of each producer. They exhibited great pride in their herds and expressed a desire to "show" a person around--they were, in effect, "fired up." Equip- ment and buildings exhibited characteristics of "good housekeeping;" neat- ness and cleanliness prevailed.

It was also interesting to note the widespread knowledge of dairying that these operators possessed. They were well versed on current dairying practices, not only in production, but in distribution as well. Dairying is their major enterprise and it was apparent they intended it to be such in the future. Old age and retirement were the only reasons given for leaving the dairy enterprise--reasons not attributable to economic failings.

Management practices of many dairymen in Custer County were expressive of inertia and decadence. Buildings and equipment were, in many cases, slovenly kept, little or no pride was expressed in the dairy herd, individual production records were not available, and a general feeling of discontent was prevalent.

This contrasting situation in Custer County may be attributed to:

1. Only 20 per cent of the cooperators considered dairying their major enterprise,
2. Farmers were unorganized and dissemination of dairy "know how" was restricted,
3. The majority were resettlement farmers who had been engaged in dairying only a few years,
4. Many settlers were "washed out" dry land farmers and lacked the persistency so necessary in efficient dairying,
5. Many expressed a general dissatisfaction with distributor buying practices,
6. Fixed costs were high and operators had little capital to invest in equipment necessary to achieve an optimum output level,
7. Envy of their dryland neighbors, who were capitalizing upon favorable economic conditions, was apparent. It was only a few years ago that most of them were one of this very lot, and reaped not the fortunes of destiny, but instead, suffered the adversities.

Highlights of production characteristics are: 1. Montana is a surplus milk-producing area and a deficit area for fluid milk, 2. Western Montana is the major producing area and is the only major area exhibiting characteristics which are typical of efficient dairying, and 3. A continual shift from east to west of Montana's dairy resources has taken place during the past decade. This has been accentuated by favorable crop producing conditions and a general city-ward migration in the dryland areas.

Processing and Distribution

Efficient methods of processing and distributing dairy products have long been the subject of investigators. Relatively low marketing margins make higher producer prices and lower consumer prices possible—a great aid in effecting a continuous supply of quality milk and in increasing per capita consumption.

Yet, we must not be too critical of marketing margins. To squeeze distributor margins excessively can only result in a loss of services—services which we, as consumers, are demanding.

Equitable returns with efficiency have become the keynote in marketing studies. The determination of an equitable return to each and every resource becomes increasingly complex as our social institutions change and technology advances. In fact, the pressures of technology have become so great that restriction of the market has been necessary to allow regulatory boards to satisfy vested interests in many areas. This results in "inequitable" returns and consequent maladjustment to the dairy industry.

One cannot determine an "equitable" return within a given market place.^{16/} The market area in its entirety must be considered.^{17/} It is only then that we will achieve maximum efficiency. It is not necessary to

^{16/} Market place is a point at which the exchange of goods or the exchange of title to goods takes place.

^{17/} Market area may be defined as covering the territory over which the same forces of supply and demand are at work on prices, so that prices in one part of the area tend to be rather quickly affected by price changes in other parts of the area. (See Dowell, Austin and Bjorka, Knute, Livestock Marketing, p. 1.)

be concerned with the cost factors of form utility (production and processing) in every market place. It is only necessary to know what is an "equitable" price in each and every market place within the market area. To arrive at an "equitable" price in each and every market place within the market area, it is necessary only to add an "equitable" charge for time and place utility.^{18/}

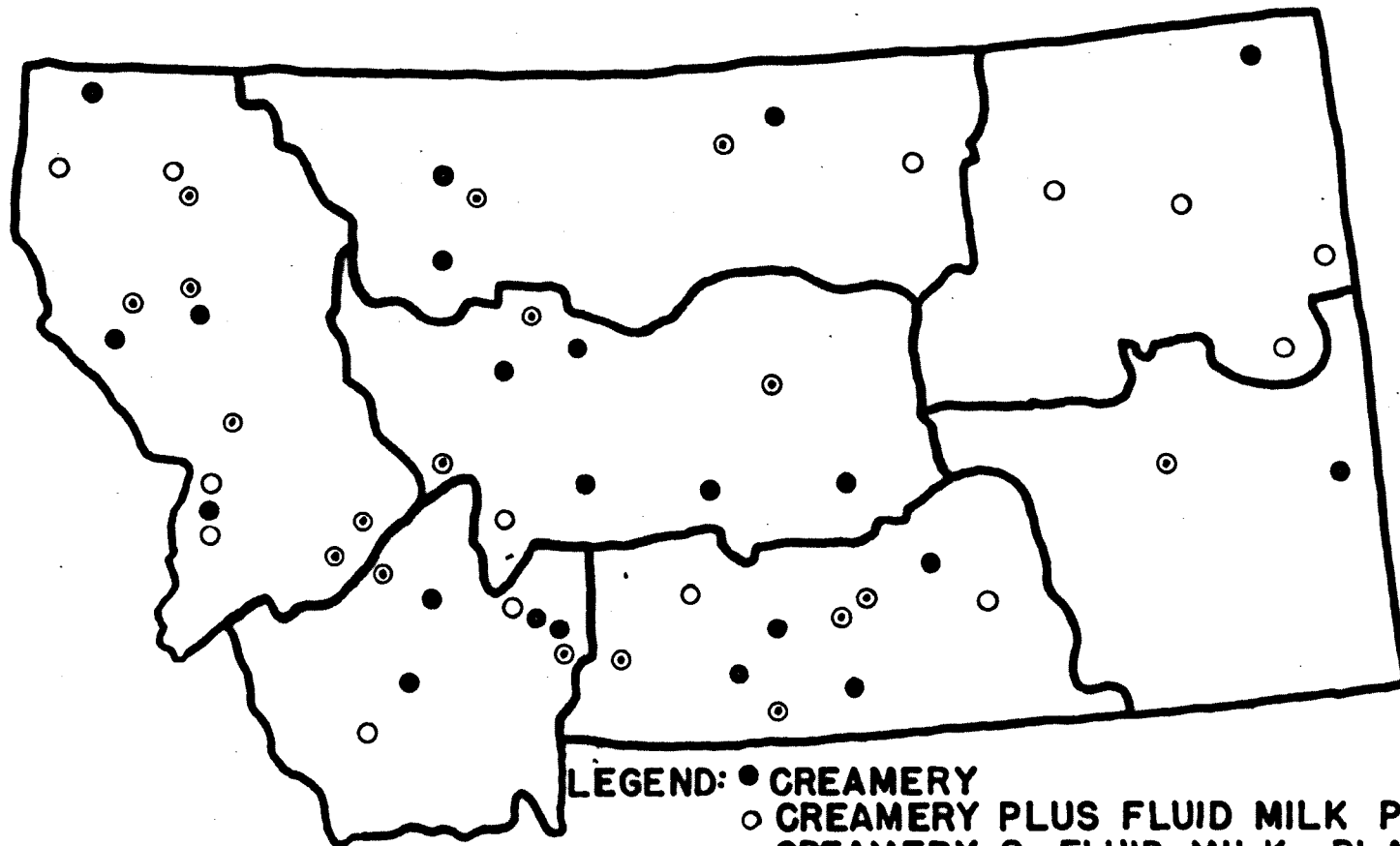
The following discussion will point up characteristics in processing and distribution that are the "roots" of inefficiency.

General Characteristics. As in production, processing and distributing plants are concentrated in western Montana, (Figure 4). Milk is a highly perishable product, and because of this, processing facilities must be relatively close to the production area. It may be noted that producers in the eastern sectors are highly dependent on creameries as their marketing outlet. A few of these creameries include fluid milk processing in their operation, but for the most part, fluid sales are made by producer distributors.

In the western districts the producer is offered several alternatives for marketing his product. There are many milk plants demanding grade A milk for fluid distribution; cheese factories and creameries that demand milk for manufacturing; and creameries that demand butterfat for processing.

Every district has the additional alternative of selling farm manufactured butter, but this channel has become of little importance due to

^{18/} See Part IV for a discussion of the "perfect" market concept.



LEGEND: ● CREAMERY
○ CREAMERY PLUS FLUID MILK PROC.
◉ CREAMERY & FLUID MILK PLANT

FIG. 4 LOCATION OF CREAMERIES,
CHEESE MANUFACTURING PLANTS
& MILK PLANTS, MONTANA, 1948.

SOURCE: MONT. AGR. STA. 1948.

the inferior quality of such products and consumer reluctance to accept them.

Thus, the producer in the eastern districts is seriously handicapped by the limitations of the market outlet. His alternatives are: 1. To sell his product as butterfat. 2. To process the butterfat and sell farm butter. 3. To become a producer-distributor--alternatives which usually exact a lower net return for the producer and distributor than the whole milk marketing channel. Meanwhile, the consumer receives a product of a decidedly lower quality.

Inter-seasonal and intra-seasonal cross-hauling of dairy products is a common practice in sparsely populated regions. Much of the butter and cheese, which is storable, is shipped out of Montana during the flush season, and during the deficit season shipments must be made into the state. It is apparent that if adequate use were made of storage facilities, considerable savings could be made in the marketing of these products.

Fluid milk shipments have and are being made across surplus areas of the state into deficit areas from far distant surplus areas.^{19/} Meanwhile, the near surplus areas have been forced to divert their production to manufacturing purposes.

Cross hauling and loss of desirable markets are primarily a result of: 1. Lack of knowledge among surplus producing areas close at hand as

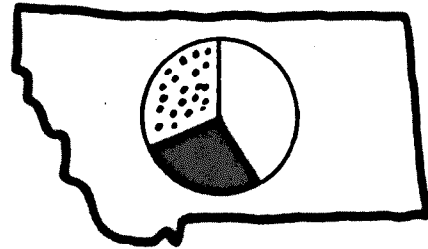
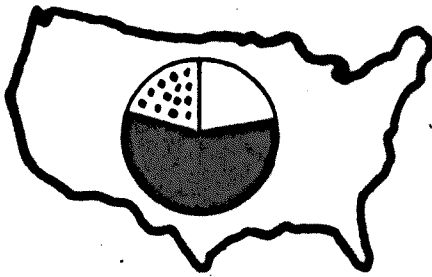
^{19/} An excellent example is the Idaho fluid milk shipments to Havre. Here the milk is routed directly through our greatest milk surplus area. These people market their supply as manufacturing milk and receive a lower net return because of it.

to the existence of deficit areas within the region. 2. Unfair and discriminatory freight rates. 3. Inadequate marketing facilities. 4. Lack of organization among distributors and producers. 5. No concerted drive by the producers and distributors of these surplus areas to secure the prevailing market.

Disposition. In Figure 5 we may well see the disposition that has been made of the milk produced. Nowhere in Montana is the national percentage average of wholemilk sales approached. Again the eastern districts are low. A rather rapid increase is noted as progress is made westward.

"Is it desirable for us in Montana to use the percentage disposition of the production in the United States as a guide in reaching the optimum?" To determine the "best" disposition in any area is a subject for much research. Production costs for each type of product must be considered; available transportation facilities would be of utmost importance; size of production and distribution units would have a direct effect; a study of imports and exports of dairy products would be imperative. In short, the comparative advantage, not only between dairying and other enterprises, but between products within the dairy enterprise, must be determined if an optimum disposition were to be made.

The most significant fact revealed in Figure 5 is the high proportion of farms selling no product in the plains region. Herds, save for a very limited number of commercial herds, are only large enough to care for the immediate needs of the family. To equate production units to these needs is an impossible task and a surplus becomes inevitable. This surplus is



LEGEND



CREAM & BUTTER



USED ON FARMS



WHOLE MILK

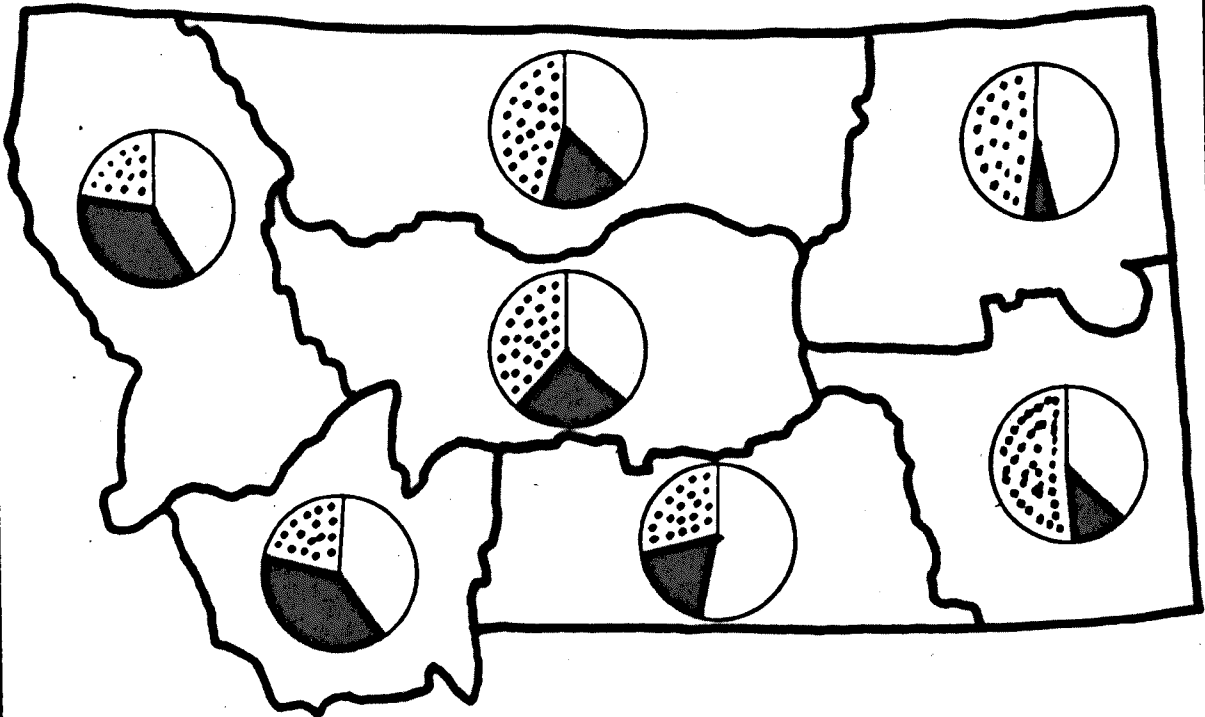


FIG. 5 DISPOSITION OF MILK
PRODUCED, UNITED STATES
MONTANA & CROP
REPORTING DISTRICTS
1944.

SOURCE: APPENDIX TABLE III

disposed of as livestock feed; where this alternative is not available (very common in the grain producing region), a direct waste of the product results.

Consumers in such an area, dependent on a single producer and distributor of milk, have little security in their source of supply. Likewise distributors in these areas are operating at a decided disadvantage. Volume is low, costs invariably high, supply unstable, and ready capital to meet undue emergencies is often unobtainable. As a result, firms in operation have been forced to liquidate. Perhaps in many cases the consumer was fortunate; he has been suffering from lack of services, an inferior product, and instability at all times. It is only through such a process that public attention is drawn to the problem--the medium from whence corrective measures must arise.

One further comment should be made concerning Figure 5. An important consideration to be made in planning for an increased consumption within an area is the available source of this supply. Upon immediate observation one may be led to believe that a great potential for increasing whole milk sales lies within the eastern districts. At present, only a small percent of the supply is sold in this manner. In the western districts a high percentage is sold via the whole milk channel. Percentagewise, the eastern districts have much further to travel--a higher percentage increase is possible.

Two major shortcomings of such an analysis are apparent. First, the total production of each district has not been considered. Based on the 1944 production figures, a 10 per cent increase in the northwestern

district is equal in quantity to a 25 per cent increase in the northeastern district. Secondly, any increase in whole milk sales would, by necessity, be forthcoming from farms selling cream and butter. In this respect, no great percentage difference is noted among districts. Thus the west, because of its larger overall production, has a far greater potential for increasing whole milk sales.

It must be understood that many further considerations would be necessary to determine the most feasible source for increasing whole milk sales. Available market outlets, concentration and organization, freight rates, roads, and unit costs are only a few of the many related problems in the determination of this problem. Some have been discussed, others will be hit upon later in the text. The primary objective of elaborating upon Figure 5 at this point was to clear the reader of any misinterpretations he may have made.

Seasonality. We have previously discussed seasonality in production. The results of such a practice was omitted from analysis until now. This was not because seasonality was not thought an important production problem, it is simply because the effects of such a practice are more clearly revealed by an analysis of manufactured dairy products. Likewise, the incentive stimulus to correct seasonality must be founded in middlemen's buying practices.

As was earlier pointed out, production ranged from a low of 36 million pounds in December to a high of 72 million pounds in June of 1948, varying from a low of 76 per cent to a high of 141 per cent of the year's mean production.

The fluctuation is still greater in manufactured dairy products, the extreme example being cheddar cheese production. Here production ranged from 57 per cent to 170 per cent of the year's mean production. Butter--the primary manufactured dairy product in Montana--fluctuated from 64 per cent to 161 per cent, (Figure 6).

Fluid milk processing figures are not shown. However, it is known from observation that fluid milk sales are relatively constant throughout the year. This, in part, accounts for the smaller degree of fluctuation in milk produced. One further, yet related, reason for the greater fluctuation in manufactured products is that no buying plan has been initiated by buyers of manufacturing milk to provide an incentive for a change of production plans. The seasonal price changes are a direct result of the forces of supply and demand, apparently an inadequate mechanism for effecting the optimum production and processing plan. However, it may be well to point out that available evidence indicates that manufacturing milk producers have paid little, if any, heed to these price changes and, as a consequence, have made no production changes.

Fluid milk producers are more typical of good dairy husbandmen. Dairying is their major enterprise and they devote more attention to carrying out an efficient operation. They also have been encouraged in a few areas to change their production pattern by seasonal buying plans.

However, even here production practices are far from adequate. In an informal discussion with Mr. Klemme, the Executive Secretary of the Montana Milk Control Board, he stated, "The surplus problem causes more

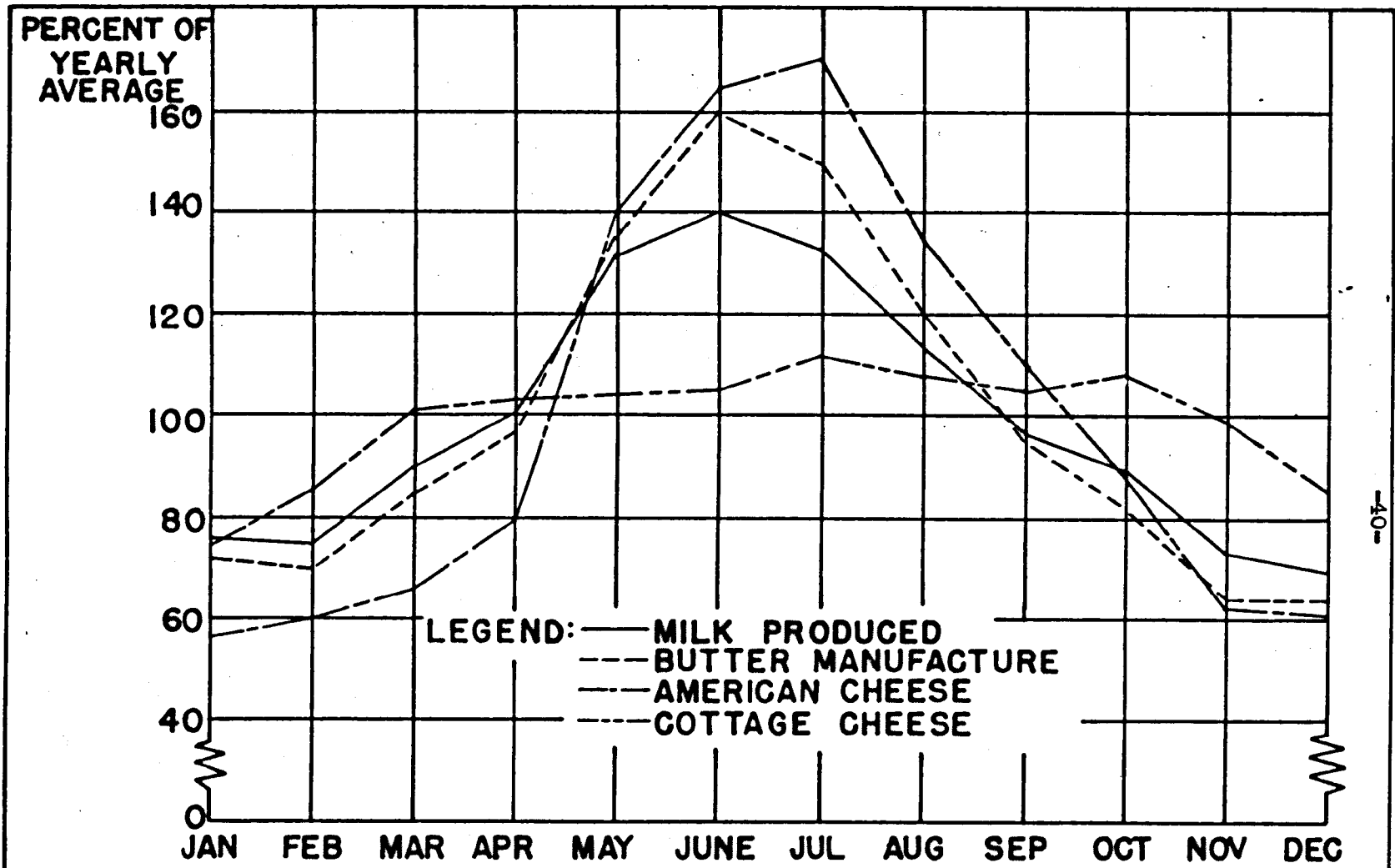


FIG. 6 SEASONAL FLUCTUATION IN THE PROD. OF MILK AND THE MANUFACTURE OF SELECTED DAIRY PRODUCTS, MONTANA, 1948.

SOURCE: APPENDIX TABLE II

trouble in pricing; production, and distribution than anything else." It is needless to say that a much greater stimulus must be provided to remove this surplus problem.

Under economic analysis of perfect competition we assume that the entrepreneur's primary objective is that of maximizing returns of all resources used. This results in "full" efficiency and gives the consumer a product at the lowest possible cost.

In dairying, as in other industries where external production forces cannot be controlled, a conflict arises between the producer and the middleman as to the point of most efficient operation. The producer of milk, to achieve maximum efficiency, would produce with that pattern of "seasonality" which would yield the greatest net revenue to the farm, i.e., where the net revenue was greatest for the entire year's production. Thus, under usual milk pricing practices, production tends to be concentrated at the season of lowest production costs. If storage were impossible and the forces of supply and demand were truly reflective of production and consumption, the "cost-revenue" margin would be equal at all times in long-run equilibrium. However, in manufactured products storage is feasible. This places the processed product in direct competition with the raw product and tends to stabilize seasonal price and accentuate the most favorable "cost-revenue" margin to the season of low production costs.

A similar result has occurred in the production of fluid milk through a somewhat dissimilar process. Before price regulation was initiated, the

