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FLUID MILK in ALABAMA

A Survey of the Production, Sales, and Supplementary Supplies of Fluid Milk in Alabama in 1947

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During and since World War II, sales of fluid milk in Alabama have been far above their pre-war level. Production in the state has been less than consumption, particularly during the fall and winter months. Information has been needed as to the extent of the shortage and how it is being met.

Fluid milk is highly perishable, and sells for a lower price per pound than many farm products. The cost of shipping it long distances is high in comparison with its value. As a result, it commonly is produced near the markets in which it is consumed. Accordingly, any regional shortage or surplus of supplies in relation to the consumption on local markets has more serious consequences than a similar shortage or surplus of most other farm products.

Production of fluid milk in Alabama is increasing. Further expansion is considered desirable. To expand production intelligently, however, farmers must know what markets are short of milk, when the shortages occur, and how much local supplies should be increased. This study was made to answer those questions.

WHAT IS FLUID MILK?

In this publication, fluid milk refers to sweet milk sold by producers and distributors who complied with regulations of the Alabama State Board of Health, or with those of the Jefferson County (Alabama) Health Department. These regulations govern the production, handling, and sale of milk[2]. Most of the fluid milk sold outside of Jefferson County in 1947 was 'grade A.' In Jefferson County, it was sold as 'special pastuerized' or 'special raw.'

Sales, as reported here, include all sweet milk[3] distributed in 1947 in large and medium-sized cities, most of that sold in small cities, and part of that sold in villages. They do not include the sweet milk that owners of family cows sold to their neighbors. Neither do the reported sales include sweet milk sold in many villages and a few small cities that was **not produced** and **distributed** in compliance with the previously mentioned regulations.

Some of the fluid milk sold in 1947 contained reconstituted milk. Most of

[1] The author is indebted to the many milk distributors and health-department workers who supplied the information used in this study. Their cooperation in providing the information requested adds to the accuracy of the findings.

[2] The regulations of the Jefferson County Health Department differ from those of the Alabama State Board of Health in various respects. Both of them set high sanitary standards for milk. The regulations of the State Board of Health, which are based on the Standard Milk Ordinance of the United States Public Health Service, are in effect in practically all cities outside Jefferson County that have adopted milk ordinances.

[3] Cream, buttermilk, chocolate drink, and chocolate milk are not included.

this was reconstituted skim milk made by adding to unsweetened grade A condensed skim milk approximately as much water as had been removed in condensing. Reconstituted skim milk was used chiefly in standardizing.

Standardizing is the process of adjusting the butterfat content of milk to a predetermined level that is usually somewhat above the minimum legal standard[4]. In 1947 most of the milk produced in Alabama was high in butterfat. When milk was plentiful, standardizing was accomplished by removing part of the butterfat from the whold milk. When milk was short, distributors in some markets were permitted to standardize by adding reconstituted skim milk to their supplies of whole milk instead of removing part of the butterfat from the milk.

APPRAISAL of INFORMATION

The information presented in this report was obtained mainly from records of county health departments and of milk distributors. Actual records of deliveries to milk dealers were obtained for the bulk of the milk produced in Alabama. Reports obtained by health department personnel from farmers were available for most of the Alabama production, for which records were not available directly from dealers.

Records of the physical quantities of milk sold were obtained from many of the larger distributors. Few of the medium-sized and small distributors kept such records. All readily available information was used in making careful estimates of those distributors' sales. However, because a smaller share of them were based upon exact records of quantities, the sales data were less dependable than the production data.

The quantities of whole milk shipped in from other states were determined in large part from records. The remainder was based upon estimates of varying dependability. The estimates of the quantity of reconstituted skim milk used were much less satisfactory. In many plants, condensed skim milk was used in more than one product and records of its disposition were generally unavailable.

Seasonal changes that appeared in both production and sales were influenced by the expansion that was taking place in the fluid milk business. Both the number of producers selling fluid milk and the number of markets supplied increased during the year. Consequently, both production and sales were higher late in the year than they would have been had they represented the output of a constant number of producers and the distribution on a constant number of markets throughout the year.

VOLUME and SOURCES of FLUID MILK SUPPLIES

Deliveries by farmers of fluid milk produced in Alabama increased from about 57,000 gallons per day in January to about 85,000 gallons per day in May, and subsequently dropped to about 59,000 gallons per day in November and December (Table 1). Most of the spring increase in the supply occurred in April and May. Production declined gradually in the early summer, and then more rapidly in the late summer and fall.

A small part of the fluid milk produced in Alabama was not available for distribution within the state. Approximately 6 per cent was marketed in Georgia and Florida, mostly at Columbus and Pensacola. This left for Alabama markets a quantity of Alabama-produced fluid milk that varied from about 55,000 gallons per day in the first 2 and last 2 months of the year to about 80,000 gallons per day in the late spring and early summer (Figure 1).

Local supplies were supplemented with shipped-in milk of three types, namely: (1) whole milk brought in throughout the year from regular sources in Mississippi and Tennessee, (2) emergency imports of whole milk during the fall and winter, and (3) shipped-in condensed skim milk[5],

[4] In 1947, the minimum in Jefferson County was 3.5 per cent butterfat by resolution of the Jefferson County Board of Health. The legal minimum was 3.25 per cent butterfat in markets complying with the regulations of the Alabama State Board of Health.

[5] Nearly all of this was grade A condensed skim milk. To be grade A condensed skim milk, it had to come from a condensery and dairy farms that met the grade A standard for milk supplies of the United States Public Health Service.

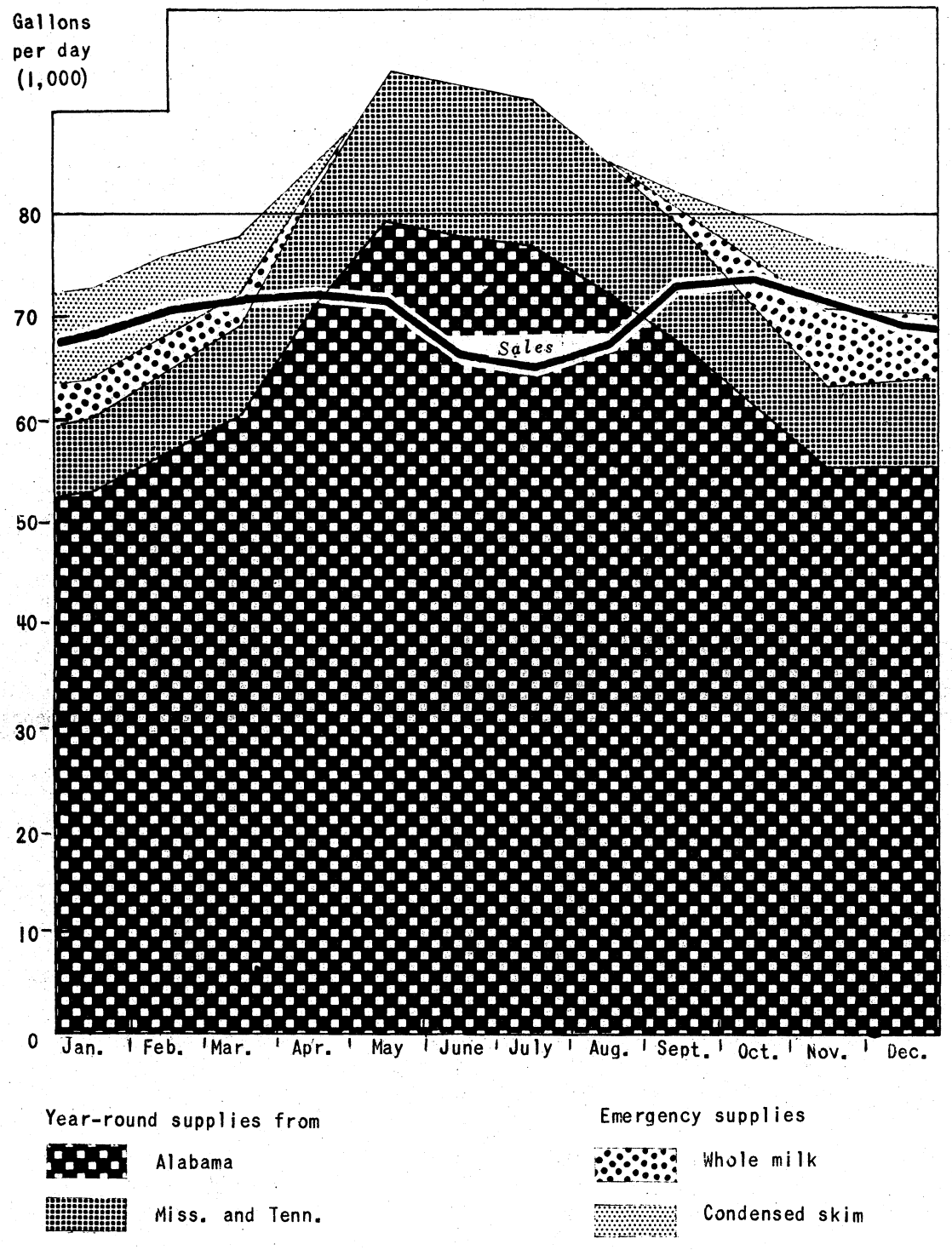


Figure 1 -- Sales and Sources of Supplies of Fluid Milk in Alabama, by Months, 1947

from which distributors reconstituted skim milk that was used in standardizing.

From March through October, the bulk of the fluid milk shipped into Alabama came from year-round sources in Mississippi and Tennessee. Over the year as a whole, these year-round shipments from adjacent states comprised nearly two-thirds of all imports, and approximately one-eighth of the supply of milk available for Alabama markets. They went mostly to Birmingham, Gadsden, Tuscaloosa, and the cities in the Tennessee Valley. These shipments showed considerable seasonal variation, though no more than production in some sections of Alabama.

Emergency supplies of whole milk were brought in during the winter and again the following fall. In early 1947, it was difficult to obtain such milk, and the quantity shipped in was small. Considerably more was shipped in during the fall, when supplies were not as short. Seasonal imports of this type were reported on many markets, but the volume was large only in Birmingham, Mobile, and Gadsden.

Condensed skim milk, most of it of grade A quality, was used to fill the gap in the winter and fall, when adequate supplies of whole milk were not available. The skim milk reconstituted from this shipped-in condensed skim milk was used mainly in standardizing. It amounted to more than 40 per cent of all imported milk in January and February. However, it was much less important the next fall, when whole milk was not as scarce as it was

TABLE 1. PRODUCTION of FLUID MILK in ALABAMA and VOLUME of FLUID MILK AVAILABLE for ALABAMA MARKETS from the VARIOUS SOURCES, by MONTHS, 1947

MONTH	AVERAGE QUANTITY PER DAY						
	FLUID MILK PRODUCED IN ALABAMA			IMPORTED SUPPLIES			
	TOTAL PRODUCTION*	NET EXPORTS TO GEORGIA AND FLORIDA	AVAILABLE FOR ALABAMA MARKETS	WHOLE MILK FROM YEAR-ROUND SOURCES	EMERGENCY IMPORTS OF WHOLE MILK	RECONSTITUTED SKIM MILK FOR STANDARDIZING**	TOTAL SUPPLY
	1,000 gallons	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*
January	57	4	53	7	4	9	73
February	61	4	57	8	4	7	76
March	65	4	61	9	3	5	78
April	76	5	71	11	1	2	85
May	85	5	80	14	-	-	94
June	84	6	78	15	-	-	93
July	83	6	77	14	-	-	91
August	78	5	73	12	-	-	85
September	72	4	68	11	2	1	82
October	65	4	61	10	5	4	80
November	59	4	55	8	8	6	77
December	59	3	56	8	7	5	76
Average	70	4	66	11	3	3	83

* Exclusive of milk used on the farms where it was produced.

** From shipped-in condensed skim milk.

TABLE 2. PERCENTAGE of ALABAMA'S FLUID MILK SUPPLIES OBTAINED from VARIOUS SOURCES, by MONTHS, 1947

MONTH	PERCENTAGE OF TOTAL SUPPLY FROM			
	AVAILABLE ALABAMA PRODUCTION*	IMPORTS FROM YEAR-ROUND SOURCES	EMERGENCY IMPORTS OF WHOLE MILK	RECONSTITUTED SKIM MILK FOR STANDARDIZING**
	Per cent	*Per cent*	*Per cent*	*Per cent*
January	73	10	5	12
February	75	11	5	9
March	78	12	4	6
April	84	13	1	2
May	85	15	-	-
June	84	16	-	-
July	85	15	-	-
August	86	14	-	-
September	83	14	2	1
October	76	13	6	5
November	72	10	10	8
December	74	10	9	7
Average	80	13	3	4

* Total production in Alabama less net exports to Georgia and Florida.

** From shipped-in condensed skim milk.

earlier in the year. More than two-thirds of the reconstituted skim milk was used in Birmingham. Small quantities, however, were used in a number of other cities.

The total supply of fluid milk from all sources showed less seasonal variation in relation to its size than either Alabama production or any one of the three types of imports. Even at that, however, the total supply increased from 73,000 gallons per day in January to 94,000 in May. It continued in excess of 90,000 gallons per day through July. It then dropped off until in November and December, when the total supply was a little larger than in January.

The supply picture may be summarized by considering the seasonal changes in the share of the milk obtained from the various sources (Table 2). In January, February, November, and December, about three-fourths of the supply originated in Alabama and approximately one-tenth came from year-round sources in Tennessee and Mississippi. During those months, the balance (roughly one-sixth of the total) was whole milk and condensed skim milk brought in to meet the emergency arising from the seasonal drop in year-round supplies. In March and October, these emergency imports made up about one-tenth of the supply. During the 6 months from April through September, inclusive, substantially the entire supply was obtained from year-round sources, with about five-sixths of it produced within the state.

AMOUNT of FLUID MILK SOLD

For the year as a whole, the quantity of fluid milk sold by distributors amounted to approximately 70,000 gallons per day (Table 3). Sales varied seasonally, although less than production and in an almost reverse pattern. Sales were 7 per cent less during June, July, and August than during the rest of the year. This

TABLE 3. QUANTITY of FLUID MILK SOLD in ALABAMA, and the RELATION BETWEEN SALES and TOTAL SUPPLIES, by MONTHS, 1947

MONTH	AVERAGE QUANTITY PER DAY		SALES OF FLUID MILK IN PERCENTAGE OF TOTAL SUPPLY
	FLUID MILK SOLD	TOTAL SUPPLY OF FLUID MILK	
	1,000 gallons	*1,000 gallons*	*Per cent*
January	69	73	95
February	71	76	93
March	72	78	92
April	72	85	85
May	72	94	77
June	67	93	72
July	65	91	71
August	67	85	79
September	73	82	89
October	74	80	92
November	71	77	92
December	69	76	91
Average	70	83	84

decline in sales during the summer was attributed to (1) closing of schools, (2) increased competition from other beverages, especially iced tea, and (3) to a lesser extent, vacation-time exodus of some consumers from the cities during the summer.

In considering the relation between the amount of milk sold and supplies, it is necessary to recognize that, even when supplies are limited, dealers are unable to sell all of the fluid milk they receive. In processing some milk adheres to containers, some leaks out, and some is spilled. In distribution, glass bottles may be broken and paper containers may leak. Moreover, both sales and receipts from producers vary from day to day. For that reason, dealers may find it necessary to use a little fluid milk in other products instead of selling it as bottled milk. Allowance also must be made for any cream removed from the milk in standardizing. Such cream is included in the quantity of milk purchased, but not in the quantity of milk sold. The excess of supplies needed to cover milk that is unavailable for distribution for these various reasons will vary with circumstances. Apparently it is seldom much less than 5 per cent of sales, and under some conditions it may amount to 10 per cent or more.

From January through March and from October through December, distributors sold more than 90 per cent of the available supply of fluid milk. During those periods most distributors were selling as large a share of their supplies as they could. In fact, sales were held down in early 1947 and to some extent in the fall by the shortage of good milk. In December, however, the decline in sales was due to closing of schools during the latter half of the month and perhaps also to below-normal purchases of milk by some families who instead spent money for Christmas.

From May through August, between 70 and 80 per cent of the available milk was sold as fluid milk. Disposal of surplus milk was a serious problem for many plants during that period of heavy production, much of which was also a period of reduced sales. Most plants used what

surplus milk they could in buttermilk and chocolate drink. Any further surplus was generally diverted into ice cream or other manufactured dairy products. In some cases, surplus milk of that type brought very low prices.

PRODUCTION and SALES in VARIOUS PARTS of the STATE

Local production available for Alabama markets[6] and sales were summarized by areas to point out the differences within the state in the relationship between supplies and the quantity of milk consumed (Figure 2). For this purpose, the state was divided into nine market areas, each of which consisted of from 4 to 14 counties. In part, the boundaries of the areas were drawn to coincide with those of the various type-of-farming areas in the state[7]. However, other factors had to be considered also. Important among them was the need of establishing the area boundaries along lines over which a minimum of milk was hauled in unrecorded quantities. Even with care used in that respect, the estimates by areas probably are somewhat less reliable than those for the state as a whole.

Area 1, which included all of the larger cities in the Tennessee Valley, was not self-sufficient in fluid milk production even in the months of flush production. Considerable milk came into the area from year-round sources in Tennessee. These supplies were supplemented with limited emergency imports of whole milk and condensed skim milk during the months of low production.

The situation was much the same in **Area 2,** which consisted of 10 counties in northeastern Alabama, in which the chief markets were Gadsden and Anniston. Production in this area and **Area 1** showed considerable seasonal variation, though less than that in the western part of the Black Belt **(Area 5).**

Area 3 included the Birmingham market. Practically all of the local dairies supplying that market were within the four counties in that area. While considerable milk was produced in those four counties, sales exceeded production by a wider margin in that area than in any other area. Birmingham's leading source of milk was that portion of the Black Belt west of Montgomery. For the year as a whole the Black Belt provided about two-fifths of the supply of milk available for the Birmingham market, and about one-eighth more than Jefferson and adjacent counties. Even though Birmingham also obtained milk throughout the year from Mississippi, it depended heavily upon emergency imports during the season of low production. In early 1947, these emergency imports consisted of condensed skim milk of grade A quality. In the fall, however, large quantities of whole milk were brought in and less reconstituted skim milk was used.

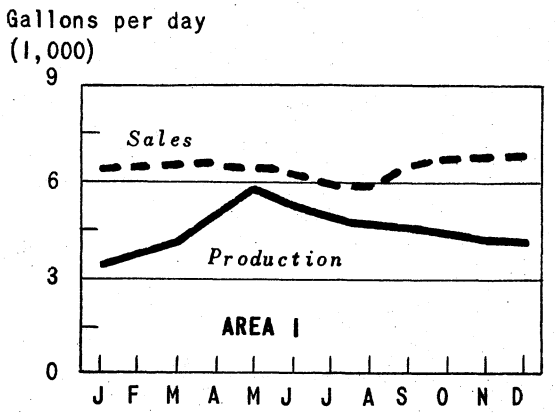
In **Area 4,** in which Tuscaloosa was the largest city, local production lacked a great deal of supplying the markets in all months of the year. This area drew much of its milk from the Black Belt and from year-round sources in Mississippi. Supplies from these regular sources were insufficient to take care of the markets in the fall and winter, when both reconstituted skim milk and emergency imports of whole milk were used to fill the gap.

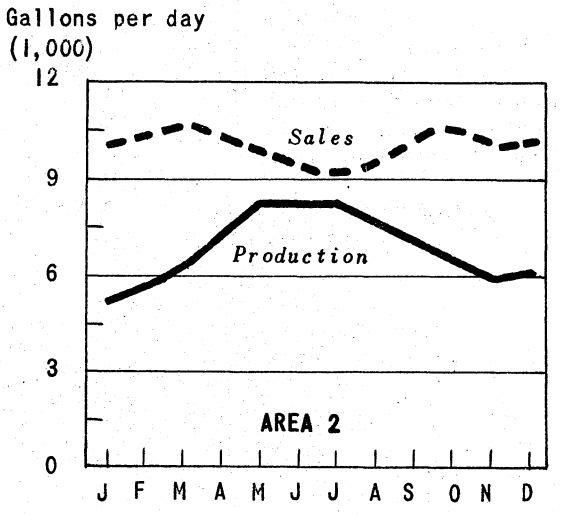
Area 5, which took in a large share of the Black Belt, produced more milk than any other area and about one-fourth of the fluid milk produced in the state. Selma was the only important market in the area. The bulk of the milk from this area was shipped to Birmingham, Mobile, and Tuscaloosa. Production in the area more than doubled between January and June, showing more pronounced seasonal variation than that in any other part of the state.

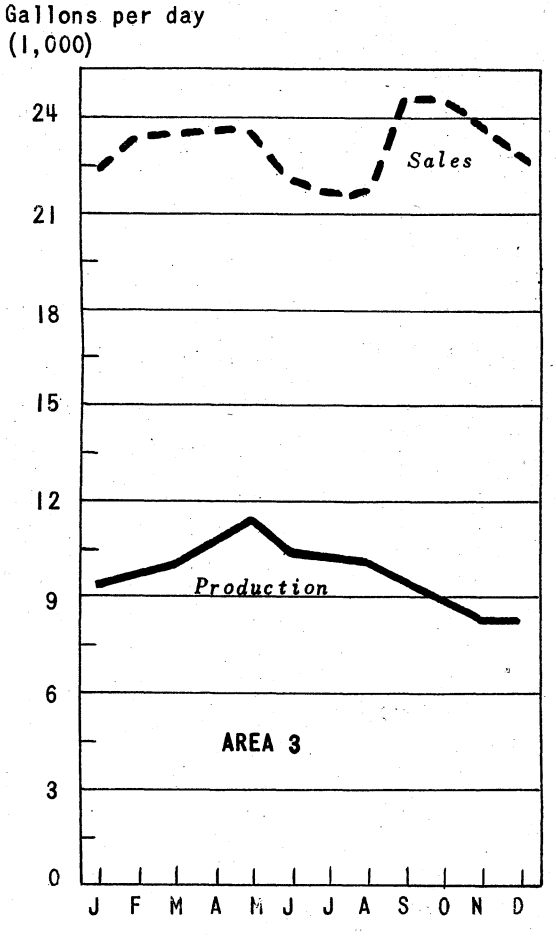
Montgomery County, which accounted for the bulk of the production and included the principal market of **Area 6,** also was a surplus-producing area, though by a much narrower margin than **Area 5.** Besides furnishing nearly all of the milk sold in Montgomery and other local mar-

[6] Total production of fluid milk in the area less any net exports to Georgia or Florida.

[7] Alvord, Ben F. et al, 'Factors Influencing Alabama Agriculture,' Ala. Agr. Expt. Sta. Bul. 250, 1941, pp. 65 - 76.







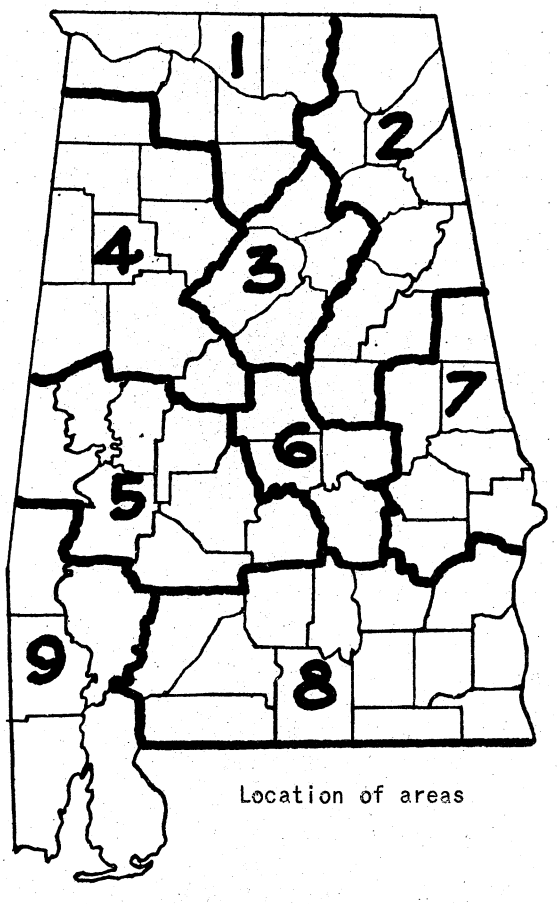
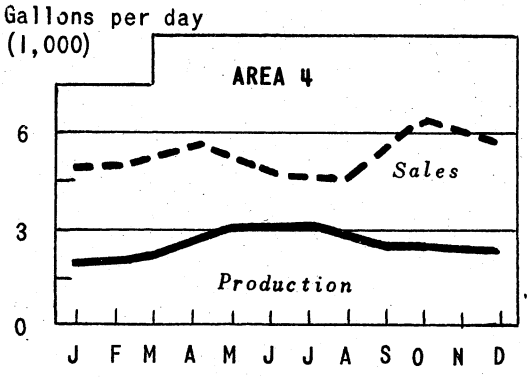
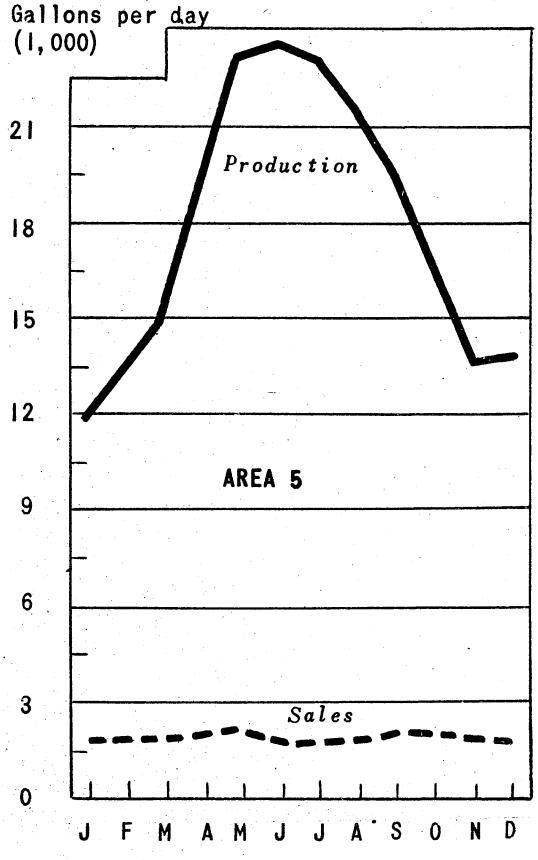
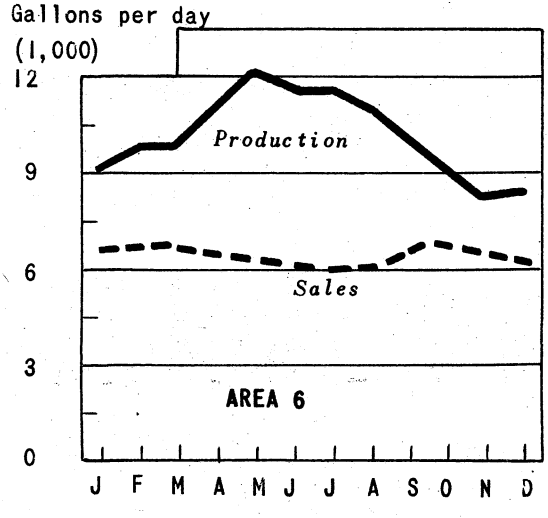
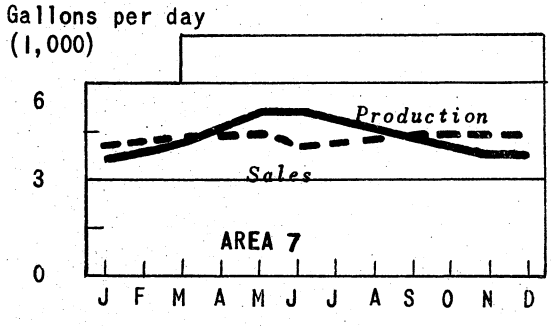


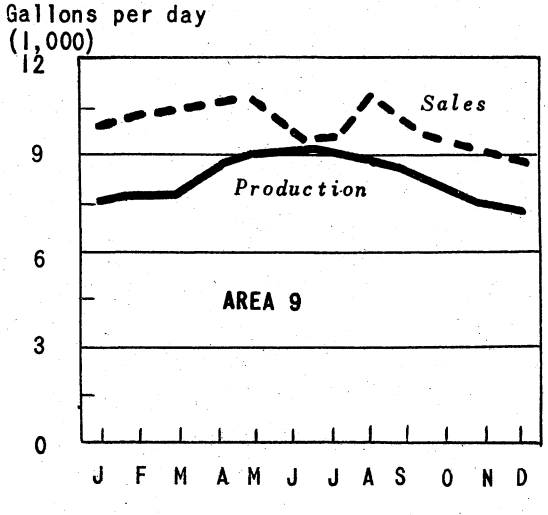
Figure 2 -- Production of Fluid Milk Available for Alabama Markets and Sales, by Months, by Market Areas, 1947

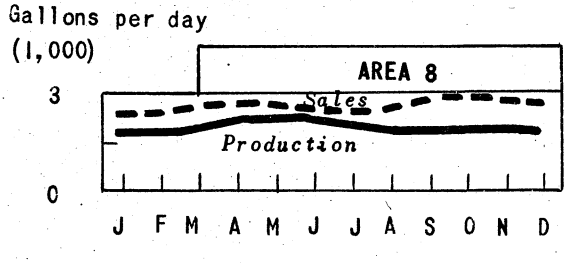

Gallons per day
(1,000)
AREA 4
6
3
0
Sales
Production
J F M A M J J A S O N D


Gallons per day
(1,000)
21
18
15
12
9
6
3
0
Production
AREA 5
Sales
J F M A M J J A S O N D


Gallons per day
(1,000)
12
9
6
3
0
Production
Sales
AREA 6
J F M A M J J A S O N D


Gallons per day
(1,000)
6
3
0
Production
Sales
AREA 7
J F M A M J J A S O N D


Gallons per day
(1,000)
12
9
6
3
0
Sales
Production
AREA 9
J F M A M J J A S O N D


Gallons per day
(1,000)
3
0
AREA 8
Sales
Production
J F M A M J J A S O N D

kets throughout the year, producers in Montgomery County helped to supply Anniston, Dothan, and several smaller markets in eastern Alabama.

Area 7 included a number of rather small markets in east central Alabama. In every month of the year, total production in this area exceeded the amount of milk consumed in the area. However, the area shipped a large amount of fluid milk to Columbus, Georgia. The quantity remaining in the area, after deducting net exports to Georgia, was sufficient to take care of sales in the area during the season of flush production but not during the winter and fall.

Little fluid milk, as defined in this report, was produced or sold in **Area 8,** which included 14 counties in the southeastern part of the state. The supplementary supplies needed in this area were drawn largely from Montgomery County.

Baldwin County produced considerable milk that went to Pensacola, Florida. Production in **Area 9** exclusive of those exports was less than consumption in the area throughout the year. The Mobile market met the deficiency by obtaining large quantities of milk from the Black Belt and bringing in emergency supplies of whole milk from the North Central States during the first 4 and last 4 months of the year.

SUMMARY and CONCLUSIONS

In 1947, the shortage of fluid milk in Alabama was most serious in the first and last quarters of the year. Fluid milk production in the state was roughly 40 per cent greater in the late spring and early summer than in the winter and late fall. Sales, while less variable, were about 7 per cent less in the summer than in the rest of the year. From May through August, total Alabama production available for Alabama markets was adequate to supply all of the fluid milk sold in the state. However, some markets were depending in part upon out-of-state supplies at that time, while others had moderate surpluses of Alabama milk.

Supplies of milk on Alabama markets were affected by year-round shipments to and from adjacent states. A number of markets obtained milk from year-round sources in Mississippi and Tennessee, and there were sizeable year-round movements of milk out of the state into Georgia and Florida. The quantity of fluid milk brought into the state in shipments of this type was about 2½ times the quantity shipped out of the state. In fact, for the year as a whole, imports from year-round sources in Mississippi and Tennessee comprised nearly two-thirds of the fluid milk brought into the state, and about one-eighth of the supply available for Alabama markets.

During the fall and winter, supplies were further supplemented with emergency imports of whole milk and condensed skim milk. These seasonal imports constituted about 17 per cent of the supply of fluid milk in January and again in November, but only 7 per cent of the total for the year.

The ratio of production to consumption varied widely over the state. The Black Belt was the only section that produced for Alabama markets more milk than it consumed. Consumption exceeded production by a wider margin in the area that included Birmingham than in any other section of the state.

In 1947, about one-fourth more Alabama production could have been marketed at prevailing prices for fluid milk in the winter and late fall in place of emergency imports of whole and condensed skim milk. On the other hand, an increase in production of one-fourth during the spring and summer would have created a serious surplus on many markets. Leveling of production, particularly among herds that show wide seasonal variation, appears to be the most promising solution of the problem. This adjustment, together with a moderate overall expansion in production, would eliminate the need for emergency imports of milk during the fall and winter without burdening markets with heavy surpluses during the spring and summer.