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Milk marketing in the North Louisiana Upland Cotton area

William H. Alexander

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MILK MARKETING IN THE NORTH LOUISIANA UPLAND COTTON AREA

By

WILLIAM H. ALEXANDER

LOUISIANA STATE UNIVERSITY
AND
AGRICULTURAL AND MECHANICAL COLLEGE
AGRICULTURAL EXPERIMENT STATION
W. G. TAGGART, Director
The United States Department of Agriculture
Bureau of Agricultural Economics
Cooperating
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MILK MARKETING IN THE NORTH LOUISIANA UPLAND COTTON AREA

WILLIAM H. ALEXANDER

Introduction

The production and marketing of milk and dairy products is of vital interest to many farmers in the Upland Cotton Area of Louisiana. The area consists of the following eight parishes: Bienville, Claiborne, DeSoto, Jackson, Lincoln, Sabine, Union, and Webster (Figure I). The number of farmers producing milk for sale and the amount of milk sold have increased considerably since 1940. This change to greater emphasis on the dairy enterprise took place rapidly during World War II and is still under way. The economic forces tending to increase the importance of dairying in the area include the following: (1) an increase in the amount of available cropland for producing feed resulting from the reduction of acres in cotton under the farm price support program of the 1930’s and the outlook for future controls; (2) the increased effective demand and higher prices for milk and dairy products; (3) the adaptation of agricultural resources in the area to the production of hay and pasture crops makes the shift to dairying possible; (4) the amount of whole milk and cream consumed in the area is greater than local production during nine months of the year; and (5) the amount of milk, cream and other dairy products shipped into the area from other regions is considerably greater than it was in 1940.

The Upland Cotton Area is characterized by family farm units with cotton as the main source of cash income. Although cotton is declining in importance it is still the major cash enterprise for the area as a whole. The area has relatively low cotton yields per acre as compared to areas having alluvial soils. The alluvial area is better adapted to mechanization and therefore has a comparative advantage in the production of cotton. Moreover, there are fewer alternative opportunities for the utilization of resources in the Upland Area. The farmers in the Upland Area have a low investment in operating equipment and machinery for cotton production, and therefore would not incur significant capital losses in shifting to the dairy enterprise.

When the price for fluid milk increased, many farmers went into the production of milk even though the price for cotton increased at the same time. This fact has focused the attention of farmers upon the merits of dairying as an alternative source of cash income in the Upland Cotton Area and has resulted in a widespread demand for information with regard to the management of dairy farms, ways for improving the milk marketing system, and the probable future demands for fresh milk in the area. In order to determine the extent to which the dairy enterprise in the area might be profitably expanded it is necessary to
analyze the potential demand for fluid milk and other milk products.

This report presents information on the sources and utilization of milk and cream marketed in the area during 1946. Data are also presented on the seasonal pattern of production and price of local and out-of-area milk. An analysis is made of the per capita consumption of milk as well as the outlook for increased per capita consumption in relation to the possibilities for an expansion of the dairy enterprise in the Upland Area. Persons interested in an economic analysis of the production phase of the dairy problem are referred to the published report indicated below.

Method and Scope of Study

Information regarding the number of wholesale milk producers, method of delivery, butterfat tests, prices paid for milk and volume of

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1Frank D. Barlow, Jr., and Morris L. McGough, Dairy Farming in the North Louisiana Upland Cotton Area — Organization, Costs, and Returns, Department of Agricultural Economics, Louisiana State University Agricultural Experiment Station Bulletin No. 435, Baton Rouge, La.
milk bought each month during 1946 from local producers, and the amount of milk purchased from other regions was obtained.

Data were also obtained from producer-distributors regarding the volume of milk produced and sold by them each month during 1946. In cases where producer-distributors purchased milk from wholesale milk producers the volume indicated is the total of their production plus that which they purchased.

Where the milk purchased from other regions was not whole milk, but was used for blending milk for fluid consumption, the volumes were converted to a 3.5 per cent milk equivalent. The amount of condensed cream and skim milk purchased from other regions by processor-distributors and used in the manufacture of buttermilk, butter and ice cream is indicated by the volume of sales of these products, because this is the only source of milk used for these purposes. The information was obtained by personal visit to the processor-distributor plants in the North Louisiana Upland Cotton Area.

All processor-distributors and producer-distributors who handled milk in cities of more than 2,000 population in the eight parishes in the Upland Cotton Area during 1946 were included in the study; therefore, the information presented in this report represents the total supply of milk to urban consumers. However, no attempt has been made to estimate the amount of milk produced and distributed by urban producers who kept a cow in their back yard. Supplemental information was obtained from the Parish Health Units, the Production and Marketing Administration, feed dealers, and others interested in the production and distribution of milk.

Description of the Area and Markets

Type of Farming

The predominant soils in the Upland Cotton Area are red clay and sandy loam with sand and clay as the chief sub-soil components. The topography is rolling and hilly. The average rainfall for the area is 49.13 inches annually, with December and January being the months of greatest and June the month of lowest precipitation. Droughts sometime occur during the summer season and are hazardous to crops and pastures. Cotton is the major source of cash farm income, and corn, oats, and sweet potatoes are other field crops. Dairying and beef cattle production have increased considerably in the last decade and now rank second as a source of farm income for the area as a whole. However, in DeSoto parish the dairy enterprise ranks first as the source of farm income. On many farms in the area the cash income is from a combination of cotton and the dairy enterprise, or cotton and other livestock enterprises.

The relative intensity of dairying as compared with crop enterprises is indicated in Table I. During 1945 there was an average of 5 cows milked per 100 acres of cropland harvested in the Upland Cotton Area. There was an average of 21 cows milked per 100 acres of corn harvested, and 22 cows milked per 100 acres of cotton harvested during
Table 1. The Average Number of Cows Milked Per 100 Acres of Cropland Harvested in the Upland Cotton Area During 1945

<table>
<thead>
<tr>
<th>Parish</th>
<th>Acres of cropland harvested</th>
<th>Average number of cows milked per 100 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cropland</td>
</tr>
<tr>
<td>Bienville</td>
<td>114,686</td>
<td>3</td>
</tr>
<tr>
<td>Claiborne</td>
<td>147,793</td>
<td>4</td>
</tr>
<tr>
<td>DeSoto</td>
<td>107,468</td>
<td>6</td>
</tr>
<tr>
<td>Jackson</td>
<td>38,487</td>
<td>6</td>
</tr>
<tr>
<td>Lincoln</td>
<td>106,225</td>
<td>4</td>
</tr>
<tr>
<td>Sabine</td>
<td>60,618</td>
<td>6</td>
</tr>
<tr>
<td>Union</td>
<td>87,623</td>
<td>5</td>
</tr>
<tr>
<td>Webster</td>
<td>82,065</td>
<td>4</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

*Includes clover, timothy, lespedeza, small grains, other tame hay, and wild hay.

the same period. One of the major weak points of the dairy enterprise in
the area is indicated in Table I, which shows that more than 3 dairy cows
were milked for each acre of hay\(^1\) harvested during 1945.

**Cows Milked Per 100 Population**

There was an average of 16 cows milked per 100 population in the
Upland Cotton Area during 1945 (Table II). The number of cows per
100 population ranged from 8 in Webster Parish to 20 in Claiborne,
DeSoto and Union Parishes. However, the eight parishes shown in
Table II are the major milk producing parishes for the Shreveport,
Monroe and El Dorado Market Areas,\(^2\) all of which are located in
parishes adjoining the producing area.

**Occupation of Employed Male Workers**

The type of employment of the major occupation groups in the
market area studied gives an indication of the intensity of farming as
compared with urban or nonfarm employment. Farming is the most
important single occupation in Bienville, Claiborne, DeSoto, Lincoln,
Sabine, and Union Parishes. The percentage of male workers employ-
ed as farm operators and laborers in these parishes ranges from 41 to
59 per cent of the total employed population (Table III).

The greatest percentage of male workers in Jackson and Webster
Parishes are employed as craftsmen and other service workers. The
major industry in these parishes is paper manufacturing, with large fac-
tories located at Hodge and Springhill. Producer-distributors in these
towns reported that there was not enough milk produced locally to
justify building adequate plant facilities for processing the supply of

---

1. Includes clover, timothy, lespedeza, small grains, other tame hay, and wild hay.
2. The term “Market Area” means milk markets within the eight parishes and nearby
cities which receive their supply of milk from producers in the area.
Table III. The Occupation of Employed Male Workers, by Parishes of the Upland Cotton Area, During 1940†

<table>
<thead>
<tr>
<th>Parish</th>
<th>Professional and semi-professional</th>
<th>Farm operators and farm laborers</th>
<th>Nonfarm proprietors, managers, clerical, &amp; sales</th>
<th>Craftsmen and other service workers</th>
<th>Unpaid family farm workers</th>
<th>Other laborers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bienville</td>
<td>4.3</td>
<td>50.8</td>
<td>8.0</td>
<td>14.8</td>
<td>11.3</td>
<td>10.8</td>
<td>100.0%</td>
</tr>
<tr>
<td>Claiborne</td>
<td>3.8</td>
<td>48.1</td>
<td>3.1</td>
<td>21.3</td>
<td>14.8</td>
<td>3.9</td>
<td>100.0%</td>
</tr>
<tr>
<td>DeSoto</td>
<td>3.1</td>
<td>48.2</td>
<td>7.3</td>
<td>15.5</td>
<td>19.2</td>
<td>6.7</td>
<td>100.0%</td>
</tr>
<tr>
<td>Jackson</td>
<td>4.4</td>
<td>28.2</td>
<td>10.5</td>
<td>32.2</td>
<td>7.0</td>
<td>17.7</td>
<td>100.0%</td>
</tr>
<tr>
<td>Lincoln</td>
<td>7.3</td>
<td>41.4</td>
<td>12.0</td>
<td>24.4</td>
<td>7.0</td>
<td>7.9</td>
<td>100.0%</td>
</tr>
<tr>
<td>Sabine</td>
<td>5.6</td>
<td>43.0</td>
<td>8.5</td>
<td>22.3</td>
<td>9.4</td>
<td>11.2</td>
<td>100.0%</td>
</tr>
<tr>
<td>Union</td>
<td>4.5</td>
<td>59.2</td>
<td>7.2</td>
<td>13.8</td>
<td>7.9</td>
<td>7.4</td>
<td>100.0%</td>
</tr>
<tr>
<td>Webster</td>
<td>4.8</td>
<td>29.2</td>
<td>12.4</td>
<td>36.6</td>
<td>6.8</td>
<td>10.2</td>
<td>100.0%</td>
</tr>
<tr>
<td>Area Average</td>
<td>4.3</td>
<td>37.2</td>
<td>11.9</td>
<td>28.2</td>
<td>8.7</td>
<td>9.2</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

†United States Census of Agriculture, Bureau of Census, Volume 1, 1945.
milk needed by local consumers. They also report that currently the
demand for fluid milk in these towns greatly exceeds the supply.

**Volume and Source of Milk Supply**

There was an average of 240 dairy farmers in the Upland Cotton
Area who produced and sold milk at wholesale to processor-distributors
in the area. The number of producers ranged from 217 during January
to 256 during September (Table VI). The average annual production
per dairy farmer in the area was 142,559 pounds, or an average of 11,-
880 pounds per month. The monthly production per farmer ranged
from 7,885 pounds in November to 16,087 pounds in June.

There were six processor-distributors in the Upland Cotton Area
during 1946 who purchased and processed all the fluid milk they dis-
tributed. Two of these were located in Monroe, Louisiana, three in
Shreveport, Louisiana, and one in El Dorado, Arkansas. This type of
distributor represented about 15 per cent of the total number of milk
distributors, but they delivered about 82 per cent of the total supply
of milk to consumers in the market area during 1946. Processor-distrib-
utors delivered an average of 8,813 quarts of milk daily during 1946,
(Table IV), all of which was pasteurized.

There were 41 producer-distributors in the Upland Cotton Area
during 1946. Thirty-three of these produced all of their milk supply
from their own herds, with the exception of small purchases from other
distributors during the winter months when their supply was short.
Eight of the producer-distributors purchased a part of their supply from
other dairy farmers in addition to production on their own farms.

The average number of quarts of milk delivered per day by pro-
ducer-distributors was 287 and ranged from 257 quarts in February to
319 quarts per day in June. Less than half of the producer-distributors
were pasteurizing milk during 1946; however, three-fourths of the
milk delivered by this group was pasteurized. Producer-distributors who
were pasteurizing delivered a greater volume of milk daily than those
who were not pasteurizing.

Processor and producer-distributors in the Upland Cotton Area de-
ivered approximately 51 million pounds of milk to consumers during
1946. The six processor-distributors handled 42 million pounds, or 82
per cent of the total supply, and the producer-distributors handled 9
million pounds, or 18 per cent of the supply (Table V).

The average amount of milk delivered by each processor-distribu-
tor during 1946 was 7 million pounds, and the average for each producer-
distributor was one-quarter million pounds. Sixty-six per cent of the
milk was produced by local wholesale producers, 18 per cent by pro-
ducer-distributors, and 16 per cent was purchased from distributors in
other regions.

**Prices Received by Farmers for Milk**

During 1946 the weighted average price received by local whole-
sale milk producers in the Upland Cotton Area was $4.53 per hundred-
Table IV. The Average Number of Quarts of Milk Delivered per Day by
Producer-Distributors and Processor-Distributors During 1946

<table>
<thead>
<tr>
<th>Market Area</th>
<th>Producer-Distributors</th>
<th>Processor-Distributors</th>
<th>Upland Area Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Quarts Per Day</td>
<td>Per cent of Total</td>
</tr>
<tr>
<td>Monroe-El Dorado</td>
<td>16</td>
<td>256</td>
<td>23</td>
</tr>
<tr>
<td>Shreveport</td>
<td>5</td>
<td>488</td>
<td>6</td>
</tr>
<tr>
<td>Ruston-Arcadia</td>
<td>8</td>
<td>249</td>
<td>100</td>
</tr>
<tr>
<td>Minden</td>
<td>4</td>
<td>187</td>
<td>50</td>
</tr>
<tr>
<td>Homer-Haynesville</td>
<td>5</td>
<td>388</td>
<td>100</td>
</tr>
<tr>
<td>Springhill</td>
<td>3</td>
<td>174</td>
<td>40</td>
</tr>
<tr>
<td>Area</td>
<td>41</td>
<td>287</td>
<td>18</td>
</tr>
</tbody>
</table>

\(^1\) Processor-distributors from the Shreveport Market Area also delivered milk in these cities during 1946.

\(^2\) Estimated.
weight of milk containing 4 per cent butterfat. The price ranged from about $3.90 during the first six months to $5.75 during December (Table VI). The lower prices during the first six months were due in part to government price controls. The prices indicated in Table VI are weighted average prices for milk containing 4 per cent butterfat, and therefore do not represent the actual prices received by farmers because of the difference in individual butterfat tests and the differentials used by various dealers for milk containing higher or lower than 4 per cent butterfat. The price paid for milk, as indicated in Table VI, does not include subsidy payments, which ranged from 70 cents per hundredweight during the first four months of 1946 to 55 cents during May and June.

With the exception of the period of time that the price of milk was controlled by OPA, there has usually been a variation in the price paid for milk during winter and summer. During the first six months of 1946 price controls on milk were still in effect; therefore, in addition to the price per hundredweight as shown in Table VI, the farmers were receiving a subsidy payment from the government. The amount of the payment varied from 70 cents per hundredweight during the first four months to 55 cents during May and June. Following the removal of price control on June 30, 1946, the price of milk in the Upland Cotton Area increased from $3.91 in June to $4.78 in July, and continued to increase until the end of the year. The increase in price was more than off-set by the decrease in production; therefore, the farmer's monthly receipts from the sale of milk were less during the winter months.

The price of milk purchased in other regions, as indicated in Table VI, is the net cost of 100 pounds of milk to the processor-distributor. It includes the price paid to distributors and transportation cost. Processor-distributors in the Upland Cotton Area purchased milk in several Middle Western cities during 1946; therefore the transportation costs would vary with the location of the seller, but the average transportation cost was approximately $2.29 per 100 pounds of milk. As a result, the processor-distributors were unable to bring milk in from other regions as cheaply as they could buy it from local producers. The weighted average annual price for milk purchased in the Middle Western market was $6.85 per 100 pounds of 4 per cent milk during 1946.

Four per cent milk purchased from Middle Western markets cost local distributors approximately $2.32 more per 100 pounds than milk purchased from local producers. This fact is contrary to the belief of many local producers that processor-distributors are eager to purchase milk from other regions in preference to milk produced locally. The major factors which contribute to the higher costs for milk purchased from other regions are the cost of transportation and the season of the year in which the milk is available. Most of the milk brought in from other regions is purchased during the months of October, November,
Table V. The Volume of Milk Handled by Producer-Distributors and Processor-Distributors in the Upland Cotton Area During 1946

<table>
<thead>
<tr>
<th>Market Area</th>
<th>Producer-Distributors</th>
<th>Processor-Distributors</th>
<th></th>
<th>Number</th>
<th>Total volume of milk handled in 1946 (1,000 pounds)</th>
<th>Per cent of Total</th>
<th>Number</th>
<th>Total volume of milk handled in 1946 (1,000 pounds)</th>
<th>Per cent of Total</th>
<th>Total (1,000 pounds)</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monroe-El Dorado</td>
<td>16</td>
<td>3,216</td>
<td>23</td>
<td>3</td>
<td>11,021</td>
<td>77</td>
<td>14,237</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shreveport</td>
<td>5</td>
<td>1,915</td>
<td>6</td>
<td>3</td>
<td>30,476</td>
<td>94</td>
<td>32,391</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arcadia-Ruston</td>
<td>8</td>
<td>1,564</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,564</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homer-Haynesville</td>
<td>5</td>
<td>1,562</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,562</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minden</td>
<td>4</td>
<td>586</td>
<td>50</td>
<td>2¹</td>
<td>586²</td>
<td>50²</td>
<td>1,172</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Springhill</td>
<td>3</td>
<td>410</td>
<td>40</td>
<td>2¹</td>
<td>656²</td>
<td>60²</td>
<td>1,066</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area total</td>
<td>41</td>
<td>9,253</td>
<td>18</td>
<td>6</td>
<td>41,497</td>
<td>82</td>
<td>50,750</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>226</td>
<td></td>
<td></td>
<td>6,916</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Processor-distributors in the Shreveport milkshed delivered milk in Minden and Springhill.
²Estimated.
Table VI. The Variation in the Number of Wholesale Milk Producers, the Amount of Milk Produced, and the Price Received per Hundredweight of Milk by Dairy Farmers in the Upland Cotton Area During 1946

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of producers</td>
<td>217</td>
<td>221</td>
<td>222</td>
<td>235</td>
<td>252</td>
<td>249</td>
<td>245</td>
<td>254</td>
<td>256</td>
<td>243</td>
<td>243</td>
<td>247</td>
<td>240</td>
</tr>
<tr>
<td>Average lbs. of milk produced</td>
<td>10,765</td>
<td>10,156</td>
<td>14,023</td>
<td>14,662</td>
<td>14,126</td>
<td>16,087</td>
<td>12,569</td>
<td>12,204</td>
<td>10,958</td>
<td>9,923</td>
<td>7,885</td>
<td>8,897</td>
<td>142,559</td>
</tr>
<tr>
<td>Price received by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Weighted average per 100 pounds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local producers</td>
<td>$3.89</td>
<td>$3.88</td>
<td>$3.90</td>
<td>$3.93</td>
<td>$3.88</td>
<td>$3.91</td>
<td>$4.78</td>
<td>$5.30</td>
<td>$5.32</td>
<td>$5.27</td>
<td>$5.63</td>
<td>$5.75</td>
<td>$4.53</td>
</tr>
<tr>
<td>Other Regions&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$5.53</td>
<td>$5.64</td>
<td>$5.69</td>
<td>$6.09</td>
<td>$6.39</td>
<td>$6.50</td>
<td>$7.07</td>
<td>$7.05</td>
<td>$6.96</td>
<td>$7.49</td>
<td>$7.43</td>
<td>$7.15</td>
<td>$6.85</td>
</tr>
</tbody>
</table>

<sup>1</sup>The Middle West primarily.
December, January and February. Historically, the price paid to farmers for milk during these months has been higher than prices paid during spring and summer months, primarily because the cost of producing winter milk is higher than the cost of producing milk during the spring and summer when grass is abundant. Normally, during the months of peak production, farmers in the Upland Cotton Area produce more milk than is sold as fluid milk or cream, and are forced to take a "surplus" price for that portion of their milk which dealers are unable to utilize as fluid milk. However, during 1946 all the milk purchased from local wholesale producers was used as fluid milk or fluid cream; therefore no milk was purchased at "surplus" price.

Processor-distributors in the Upland Cotton Area use two basic plans for determining the price paid to local farmers for wholesale milk. During 1946, 94 per cent of the milk used as fluid milk was purchased under the flat-rate price plan. Under this plan, the distributors quote a price per 100 pounds of milk containing 4 per cent butterfat, with a differential to establish a price for milk of higher or lower butterfat content. During periods when the volume of milk produced is higher than consumer demands for fluid milk, the pricing plan is a variation of the flat-rate and base-surplus plan. Six per cent of the milk purchased for fluid distribution in the Upland Cotton Area during 1946 was purchased on a butterfat basis. Under this system, fluid milk prices to farmers are quoted at a certain amount per pound of butterfat contained in whole milk. Where this plan is used differentials for butterfat in milk are not required.

Utilization of Milk Supply

During 1946 all of the milk produced and sold by local wholesale producers was used as fluid milk or fluid cream. Also, all whole milk purchased from other regions was sold as fluid milk. Fluid cream used in the area was obtained both from milk produced by farmers in the area and purchased from other regions. The skim milk and cream used in the manufacture of buttermilk, chocolate milk, butter, cottage cheese, and ice cream was obtained from other regions.

Table VII indicates that the volume of milk sold as fluid milk by the processor-distributors was approximately 42 million pounds, or about 82 per cent of the total fluid milk distributed by dealers in the area during 1946. Part of the fluid cream distributed by processor-distributors was obtained from local producers, i.e., by standardizing of milk containing higher than basic butterfat test, and part was purchased from distributors in other regions. All skim milk or butterfat used in the manufacture of buttermilk, chocolate milk, butter, cottage cheese, and ice cream was purchased from distributors in other regions.

Seasonal Variation in Milk Production

There was a great deal of seasonal variation in the amount of milk received by processor-distributors from producers in the Upland Cotton
Table VII. The Utilization of the Total Milk Supply by Processor-Distributors in the Upland Cotton Area During 1946

<table>
<thead>
<tr>
<th>VOLUME OF MILK SOLD AS:</th>
<th>Fluid milk, pounds (000)</th>
<th>Fluid Cream, pounds</th>
<th>Buttermilk, pounds (000)</th>
<th>Chocolate Milk, pounds (000)</th>
<th>Butter, pounds (000)</th>
<th>Cottage Cheese, pounds</th>
<th>Ice Cream, gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluid milk, pounds (000)</td>
<td>Light (000)</td>
<td>Heavy (000)</td>
<td>Buttermilk, pounds (000)</td>
<td>Chocolate Milk, pounds (000)</td>
<td>Butter, pounds (000)</td>
<td>Cottage Cheese, pounds</td>
</tr>
<tr>
<td>Monroe-El Dorado</td>
<td>11,021</td>
<td>175</td>
<td>164</td>
<td>232</td>
<td>...</td>
<td>...</td>
<td>3,482</td>
</tr>
<tr>
<td>Shreveport</td>
<td>30,476</td>
<td>942</td>
<td>274</td>
<td>4,670</td>
<td>1,360</td>
<td>144,377</td>
<td>48,369</td>
</tr>
<tr>
<td>Total</td>
<td>41,497</td>
<td>1,117</td>
<td>438</td>
<td>4,902</td>
<td>1,360</td>
<td>144,377</td>
<td>51,851</td>
</tr>
</tbody>
</table>

1Not available.
<table>
<thead>
<tr>
<th>Month</th>
<th>Received from Local Producers</th>
<th>Percentage</th>
<th>Wt'd. Av. Price Per Cwt.</th>
<th>Percentage of Average Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thousand Pounds</td>
<td>Per cent</td>
<td>Dollars</td>
<td>Per cent</td>
</tr>
<tr>
<td>January</td>
<td>2336</td>
<td>6.83</td>
<td>3.89</td>
<td>5.87</td>
</tr>
<tr>
<td>February</td>
<td>2244</td>
<td>6.56</td>
<td>3.88</td>
<td>5.62</td>
</tr>
<tr>
<td>March</td>
<td>3073</td>
<td>9.98</td>
<td>3.90</td>
<td>7.75</td>
</tr>
<tr>
<td>April</td>
<td>3401</td>
<td>9.94</td>
<td>3.93</td>
<td>8.63</td>
</tr>
<tr>
<td>May</td>
<td>3560</td>
<td>10.40</td>
<td>3.88</td>
<td>8.92</td>
</tr>
<tr>
<td>June</td>
<td>4006</td>
<td>11.71</td>
<td>3.91</td>
<td>9.22</td>
</tr>
<tr>
<td>July</td>
<td>3079</td>
<td>9.00</td>
<td>4.78</td>
<td>9.53</td>
</tr>
<tr>
<td>August</td>
<td>3100</td>
<td>9.06</td>
<td>5.30</td>
<td>10.61</td>
</tr>
<tr>
<td>September</td>
<td>2865</td>
<td>8.20</td>
<td>5.32</td>
<td>9.64</td>
</tr>
<tr>
<td>October</td>
<td>2411</td>
<td>7.05</td>
<td>5.27</td>
<td>8.20</td>
</tr>
<tr>
<td>November</td>
<td>1916</td>
<td>5.60</td>
<td>5.03</td>
<td>6.97</td>
</tr>
<tr>
<td>December</td>
<td>2198</td>
<td>6.42</td>
<td>5.75</td>
<td>9.16</td>
</tr>
<tr>
<td>Total or average</td>
<td>34129</td>
<td>100.00</td>
<td>4.53</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Area during 1946. For each 100 pounds received during October, November and December, the period of lowest production, 168 pounds were received during April, May and June, the period of highest milk production (Table VIII).

During the three months of highest production, the dairy farmers marketed 32 per cent of their annual production and received only 27 per cent of the annual value of the milk produced and sold during 1946. On the other hand, during the three months of lowest production, they marketed 19 per cent of the annual volume of milk and received 23 per cent of the annual value.

The average price paid to dairy farmers during the three months of highest production was $3.91 per hundredweight of 4 per cent milk. They received an average of $5.55 during the three months of lowest production. This indicates that there was $1.64 per hundredweight difference in the price paid to farmers between the period of highest and lowest production. Despite this increase in price, farmers produced an average of 13 per cent less milk per month in the winter.

Figure II shows the seasonal variation in the quantity of milk received by dealers from local producers, and that purchased from other regions. There was an inverse relationship between local production and outside purchases. When local production increased, the quantity purchased from other regions decreased. Purchases from other regions

Figure II. The Amount of Milk Produced and Sold by Farmers in the Upland Cotton Area and the Amount of Whole Milk Purchased by Dealers from Other Regions During 1946.
begin to increase during August, and by November local producers were supplying only 60 per cent of the milk distributed by the processor-distributors. Dealers were buying about a half-million pounds of milk per month during the peak production period during 1946. This fact is important because it indicates that the local producers are "sharing" their market with producers in other regions.

Prior to the increase in demand for milk, which occurred during World War II, processor-distributors in the larger market areas brought in milk from other regions only during the winter months when local production was short of demand. However, during and following the war, when demand was greater, they were forced to seek a supply of milk from surplus milk producing areas, even during the period of peak production by local dairy farmers. Dairy farmers in the Upland Cotton Area seldom produce enough milk to supply the demand of processor-distributors in the area during the winter. Thus the distributors must purchase milk from other regions of the country where the supply is available. This fact should be of great concern to dairy farmers in the area because the volume of milk brought in from other regions enjoys the highest price received during the year. The economic significance of this fact is evident. During the summer months of 1946, the processor-distributors were buying about a half-million pounds of milk per month from distributors in other regions, but increased their purchases to more than a million pounds per month during the winter. As pointed out earlier, the price per hundredweight of milk during the fall and winter months was about $1.64 more than the price in the spring and summer months. Therefore, if the amount of milk purchased from other regions was twice as great during the winter as in the summer, it appears that a greater seasonal variation in the price of local milk is needed or that a more equitable base-surplus plan is necessary in order to bring forth the needed adjustment in production.

The pattern of production and sales by local dairy farmers is almost the reverse of that indicated by outside purchases, i.e., they produce almost twice as much milk per month during the spring and summer as they do during the winter months. Therefore, the greatest proportion of their milk reaches the market when the price is lowest. This results in a yearly average price or blend price somewhat lower than would be the case if their pattern of production were more even throughout the year.

Although all the milk produced by local dairy farmers during 1946 was purchased and used as Class I or fluid milk by the dealers in the Upland Cotton Area, in most years prior to World War II the dealers were unable to use all milk as fluid milk, and therefore were forced to pay a "surplus" price for all above their Class I sales. It is likely that this condition will prevail again when the general price level declines.

Surplus production in an area brings with it many problems, both to the producers and dealers. It reduces the annual average or the producers' blend price. In the Upland Cotton Area, the value of the
"surplus" milk is determined by the current price of butterfat and solids-not-fat in whole milk and not according to the use of milk. Therefore, if the milk is used for manufacturing ice cream the milk distributors gain a slight advantage over farmers because they buy all surplus milk at Class III prices and sell it in Class II.\(^1\)

Many farmers expressed the opinion that the present system of determining the price of "surplus" milk does not give them returns commensurate with the use value of their total supply of milk. Under the present system, the price of "surplus" milk is determined by current butterfat quotations, while most of the "surplus" milk is not used for the manufacture of butter, but for the manufacture of ice cream. Many farmers also feel that the present method of establishing a winter base is inequitable. They maintain that the total sales of fluid milk during the winter months should be used as the base for springtime surplus. For illustration, assume that during December, when farmers are establishing their winter base, dealer A is receiving 10,000 gallons of milk which is sold as Class I, 6,000 gallons of which were produced by local producers and 4,000 gallons were purchased from dealers in other

Figure III. The Source of Total Supply of Milk Distributed to Consumers in Urban Areas of the Upland Cotton Area During 1946.

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\(^1\)Class II milk is generally defined as milk used in ice cream, ice cream mix, and in the manufacture of all cheese except cheddar. Class III is usually manufactured into butter, dry milk solids, condensed and evaporated milk, etc. Ordinarily, farmers receive a higher price for milk used in Class II than for milk used in Class III.
regions. Assume also that Class I sales in June were 10,000 gallons. Under the present base-surplus price plan, the dealers could buy 6,000 gallons in Class I and 4,000 gallons as "surplus," and distribute the 10,000 gallons as Class I during the month of June.

Figure III shows the seasonal variation and the source of the total supply of milk consumed in the Upland Cotton Area during 1946. The supply of milk distributed each month by the producer-distributors was approximately the same. The supply of milk received from other areas varied considerably from season to season; also the receipts by producer-distributors from local producers varied greatly between summer and winter months.

The average butterfat of all milk handled by the processor-distributors was 4.5 per cent. There was considerable variation in the butterfat tests of producers in the different market areas. The average butterfat test of producers in the Monroe-El Dorado Area was about three points lower than the tests of producers in the Shreveport Market Area. The significance of the difference in butterfat tests between the two areas can be appreciated only when the differential rates for each one-tenth of a point butterfat are applied. Actually, the difference in butterfat tests resulted in about 18 cents per hundredweight less being received in the Monroe-El Dorado Market Area as compared to the price received in the Shreveport Market Area.

Butterfat tests of the producer-distributors were not available.

**Per Capita Consumption of Milk**

About half as much milk was consumed per capita in the urban centers of the Upland Cotton Area during 1946 as was consumed by the average consumer in the United States. In the Monroe-El Dorado Market Area the average consumption per capita was about 93 quarts of milk during 1946. This was less than half as many quarts of milk as were consumed by the average consumer in the United States (Table IX). The per capita consumption for consumers in the Shreveport Market Area was about 106 quarts of milk during 1946. The average consumption of milk per capita for the urban centers in the Upland Cotton Area was 101 quarts of milk annually, or approximately half the per capita consumption for the United States.

Some of the factors which may contribute to the lower per capita consumption in the Upland Cotton Area are the effective buying income per family and the racial composition of the population. The urban population of Shreveport and Monroe is 35 per cent colored, and it is generally recognized that the colored people do not consume as much milk per capita as do the non-colored population, due mainly to income and possibly to food habits. The per capita consumption of milk in the Monroe-El Dorado Market Area was 6 per cent less than in the Shreveport Area and 53 per cent less than the per capita consumption in the United States.
Table IX. A Comparison of the Amount of Milk Consumed per Capita in the Upland Cotton Area and the United States During 1946

<table>
<thead>
<tr>
<th>Market Area</th>
<th>Quarts per year</th>
<th>Per cent of U. S. per capita consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monroe-El Dorado</td>
<td>92.83</td>
<td>46.96</td>
</tr>
<tr>
<td>Shreveport</td>
<td>105.52</td>
<td>53.38</td>
</tr>
<tr>
<td>Upland Cotton Area</td>
<td>101.19</td>
<td>51.19</td>
</tr>
<tr>
<td>United States</td>
<td>197.67</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Reliable data are not available which could be used to compare the net effective buying income per family in the Upland Cotton Area with family income in the United States. It is safe to assume, however, that the incomes of urban workers in the area would be about as great as family incomes in other urban centers of the United States. However, this study does not attempt to explain the reason for the low per capita consumption of milk in the Upland Cotton Area as compared with consumption of urban consumers in the United States.

The analysis of the marketing problem in the North Louisiana Upland Cotton Area is predicated upon two basic assumptions: (1) that all of the milk needed for urban consumption in the area could be produced by those producers already in production, or (2) the additional amount of milk needed could be produced within the area by increasing the number of producers.

During 1946 distributors in Shreveport, Monroe and El Dorado bought about 7.2 million pounds of whole milk from distributors in other regions of the country. If this milk had been produced in the Upland Cotton Area by the 240 dairy farmers who were already in production, each farmer would have needed to produce an additional 30,000 pounds of milk during the year. Receipts by distributors from dealers in other areas were lowest in July, when they received 196,131 pounds, and highest during October, November and December, when they brought in about one to one and a half million pounds of milk per month. If this volume of milk had been produced by the farmers already in production, each farmer would have had to almost double his production during the winter months. However, during the period of peak production, farmers in the area could have supplied the volume of milk needed by increasing production by only a few pounds per day. The 240 farmers may produce more milk than consumers will buy during the peak period of production in normal times, but generally they produce less than consumers buy during the winter months.

On the other hand, if the pattern of production by the dairy farmers already in production had remained the same and the 7.2 million pounds had been produced by increasing the number of dairy farmers, it would have required 51 additional "average" dairy farmers with an average production of 142,559 pounds of milk. The range in the num-
ber of additional average producers needed to supply the market would have been 15 during the three months of peak production and 136 during the three winter months. During the peak period of production the average production per farmer was 14,955 pounds of milk per month, whereas during the winter months the average production was 8,900 pounds per month.

It may be concluded, therefore, that the 240 dairy farmers in the Upland Cotton Area who were in production of milk during 1946 could have produced the total supply of milk needed by consumers in the area during the spring and summer months. However, it is unlikely that they could have produced the volume of milk distributed to consumers during the winter months since each dairy farmer would have had to almost double his production during this period. Analysis of the pattern of production by dairy farmers in the area indicates that the most feasible method of producing the total volume of milk needed to supply consumers in the urban centers of the Upland Cotton Area would be to increase the number of producers in the area. Under 1946 conditions, 51 additional producers were needed, but as consumer demand and patterns of production change, greater or lesser number of producers would be required, or greater volumes of milk used in the manufacture of dairy products.

**Increased Per Capita Consumption**

In order to make further analysis of the problem of marketing milk in the Upland Cotton Area, two additional assumptions have been made: (1) per capita consumption of milk by urban consumers in the Upland Cotton Area equivalent to 75 per cent of the average per capita consumption in the United States, (2) per capita consumption in the area equivalent to the per capita consumption in the United States.

Table IX shows that the per capita consumption of milk in the urban centers of the Upland Cotton Area was 51 per cent of the average consumption of milk by consumers in the United States during 1946. If per capita consumption in the area were increased to 148 quarts of milk per year, or 75 per cent of the average per capita consumption in the United States, an additional 12 million pounds of milk would be needed. On the other hand, if the per capita consumption in the area were 197 quarts, which was the per capita consumption in the U. S., approximately 76 million additional pounds of milk would be needed annually in the Upland Cotton Area. This is about 25 million pounds more milk than was consumed in the area during 1946. Based upon the assumption that the per capita consumption in the Upland Cotton Area could be increased to 75 or 100 per cent of the U. S. per capita consumption average, it would require 200 and 290 additional average producers, respectively.

Figure IV shows the number of producers who sold milk wholesale to processor-distributors in the Upland Cotton Area during 1946. Also it shows the number of average producers that would have been needed
if the total supply of milk which was distributed in the area during 1946 were produced locally. It also shows the number of “average” producers that would have been required if the average per capita consumption were 75 and 100 per cent of the average per capita consumption in the United States.

Figure IV. The Average Number of Producers Who Sold Milk at Wholesale in the Upland Cotton Area During 1946, the Number of Additional Producers Needed If all Milk Distributed Had Been Produced Locally, and the Number of Producers Needed If the Per Capita Consumption were 75 and 100 Per Cent of the Per Capita Consumption in the United States.

The number of wholesale producers in the Upland Cotton Area ranged from 217 in January to 256 in September and averaged 240 for the year (Table VI). Figure IV indicates that the greatest number of producers would be needed during the fall and winter months. The wide variation in the additional number of dairy farmers needed is due
to the pattern of production by the farmers who were producing milk during 1946. The number of producers required to completely supply the markets in the Upland Cotton Area would be smaller if their pattern of production were adjusted so that an approximately even supply of milk reached the market during all months of the year.

Figure V shows the seasonal variation in the amount of milk that was marketed in the Upland Cotton Area during 1946 by local dairy farmers, the amount of milk that was distributed by processor-distributors, which includes out-of-area shipments, and the amount of milk which would have been distributed if the per capita consumption were 75 and 100 per cent of the U. S. average consumption.

The seasonal pattern of milk distributed by processor-distributors was fairly uniform, but the seasonal variation in the amount of milk supplied by local dairy farmers was great (Figure V). One of the greatest improvements that could be made in the dairy enterprise in the Upland Cotton Area is that of adjusting the pattern of milk production more in line with the needs of the market. Farm management practices which would help solve this problem are pointed out in a farm management analysis of the area made simultaneously with this study.1

Figure V. The Total Volume of Wholesale Milk Produced by Farmers in the Upland Cotton Area during 1946, the Amount of Milk Distributed, and the Amount of Milk Which Would Have Been Sold if the Per Capita Consumption in the Area Were 75 and 100 Per Cent of the Average Per Capita Consumption in the United States.

1Ibid.
Farmers who do not adjust their production to the seasonal needs of the market will have more milk classified as "surplus" during the spring and summer when the effective demand for milk declines. This situation tends to reduce their average annual or blend price and their net returns from the sale of milk.

The seasonal peak shown during the early summer in Table V is a typical pattern of production in most milk producing areas. It is likely, therefore, that if all milk needed for local consumers were produced locally, there would necessarily be some milk during the spring and summer purchased as "surplus" or excess milk.

**Summary and Conclusion**

1. The data and conclusions in this report apply to the North Louisiana Upland Cotton Area which is composed of Bienville, Claiborne, DeSoto, Jackson, Lincoln, Sabine, Union, and Webster Parishes, and the hill sections of Bossier, Caddo and Ouachita Parishes.

2. Twenty-one cows were milked for each 100 acres of corn harvested in the North Louisiana Upland Cotton Area during 1945, twenty-two for each 100 acres of cotton harvested, and five for each 100 acres of cropland harvested.

3. There was an average of 16 cows milked per 100 population, or more than six persons per cow milked in the Upland Cotton Area during 1945. Forty-six per cent of employed male workers in the eight parishes included in the study were either farm operators, farm laborers or unpaid family farm workers.

4. There were six processor-distributors and 41 producer-distributors in the area during 1946. The former handled 42 million pounds of milk, or 82 per cent of the total supply distributed to consumers, and the latter handled 9 million pounds of milk, or 18 per cent of the supply distributed to consumers.

5. Urban consumers in the Upland Cotton Area purchased approximately 51 million pounds of fluid milk from distributors during 1946. Forty-four million pounds, or 84 per cent, was produced by local dairymen, and 7 million pounds, or 16 per cent, was purchased from distributors in other regions.

6. It would have required 15 additional "average" producers to have produced the amount of milk shipped in from other regions during June, and 162 additional "average" producers to produce the amount shipped in during November. It would have required 51 additional farmers who produced an average of 142,559 pounds of milk per year each, if all of the fluid milk distributed in the area had been produced locally.

7. If the local farmers who produced milk during 1946, had produced enough additional milk to equal the amount purchased from other regions, it would have required only minor daily increases during the flush season, but each farmer would have needed to double his production during the winter months.
8. Urban consumers in the Upland Cotton Area consumed an average of 101 quarts of fluid milk each during 1946, or 51 per cent of the national average. Twelve million additional pounds of milk would be needed if the per capita consumption increased to 148 quarts annually, or 75 per cent of the average per capita consumption in the United States. Twenty-six million additional pounds would be needed if per capita consumption were equal to 196.67 quarts, or the average per capita consumption in the United States.

9. Two hundred additional producers with an average annual production of 142,559 pounds of milk would be needed if the per capita consumption in the Area were 75 per cent of the per capita consumption in the United States. Two hundred and ninety additional "average" producers would be needed if the per capita consumption were equal to the United States per capita consumption.

10. The average price received by local dairy farmers for whole milk containing four per cent butterfat was $4.53 per hundredweight during 1946. The average net cost to distributors for whole milk containing four per cent butterfat which was shipped in from other regions was $6.85 per hundredweight. All of the milk produced and sold by local wholesale dairy farmers was used in Class I or fluid milk or cream during 1946, but normally farmers produce an excessive supply during the flush season and not enough to supply the demand in winter.

11. Ninety-four per cent of the fluid milk sold by local farmers was purchased under the flat-rate price plan. Under this plan, the distributors quote a price per 100 pounds of milk containing four per cent butterfat, with a differential to establish a price for milk with higher or lower butterfat content. Six per cent was purchased on a butterfat basis. Under this system fluid milk prices are quoted to farmers at a certain amount per pound of butterfat contained in whole milk.

12. There was a wide seasonal variation in the production of milk in the Upland Cotton Area during 1946. For each 100 pounds of local milk received by distributors during October, November and December, or the short production months, 168 pounds were received during April, May and June, or the months of flush production. The average amount of milk produced and sold each month by local wholesale producers varied from 7,885 in November to 16,087 pounds in June.

13. It appears that several million additional pounds of milk could be sold annually by local farmers if all distributors in the Upland Cotton Area would use local milk in the manufacture of ice cream, butter-milk, chocolate milk, butter, and cottage cheese. The study shows that most milk used in these products during 1946 was purchased from other regions. It is recognized that distributors might be required to condense and store some of the local milk supply during the flush season if the total supply of local milk is to be used in the production of these products.
14. Dairy farmers in the Upland Cotton Area must adjust their pattern of milk production in order to supply the market needs. This would require that farmers produce an approximately even supply of milk during all seasons of the year. The production of excess milk during the flush season reduces the blend price for milk; therefore farmers with a more even production receive the greatest net returns from their milk.

15. Producers and distributors should work together to obtain an increased per capita consumption of fluid milk by urban consumers in the Upland Cotton Area. This may require an adjustment in price from time to time in order that a greater volume of milk could be used in Class I or fluid milk.

16. A price plan should be developed for the area which would give farmers a price for milk according to its utilization by distributors. Consideration should be given to an equitable base-surplus plan and an adequate seasonal difference in the price of milk. This type of price plan probably would stimulate the production of milk locally during winter months, which would benefit producers, distributors and consumers.