September 30, 1958
Volume 13 · Number 21

Monthly Review

OF THE FEDERAL RESERVE BANK OF MINNEAPOLIS

Economy slants upward

At the beginning of the 1958 fall season, the district's economic indicators show a definite optimistic slant. Of primary importance is the very large small-grain crop just harvested. The crop was not only record in size but also of exceptionally high quality. Nearly perfect weather, wet and cool during June and July and dry and warm during harvest, explains the huge crops this season. Very rarely has this combination of weather factors been so favorable to crop production and seldom has the plant disease factor been so insignificant.

Unfortunately, the weather factors so favorable to small-grain production tended to slow down the early development of corn and soybeans, which are especially important in Minnesota and in southeastern South Dakota. Nevertheless, the weather during September has been almost ideal for these crops and the warm frost-free days of September have largely overcome the early backwardness of these late maturing crops. Soybeans promise to set a new high in production and the corn crop is now expected to be about as large as last year's near record crop.

The big grain crops together with high livestock marketings at favorable prices are expected to boost 1958 cash farm income to an all time high.

The district's nonagricultural economy appears also to be gaining in momentum with the single

Contents

Minneapolis area housing prices 4
Dairying in the Ninth district 7

exception of the important iron ore and copper mining areas in the district. In these areas unemployment and economic activity continue depressed. For example, iron ore carloadings during August were down 39 percent from a year earlier. Bank debits and store sales are also off sharply in these areas.

In much of the district home builders are enjoying the first real surge in housing starts in four years, with starts near record highs. Public construction is also moving upwards at a fast pace. The average work-week in manufacturing in Minnesota increased from 39 hours last April to an estimated 39.7 hours in August. In the Dakotas the increase in the work-week was much more pronounced. District nonagricultural employment showed a .7 percent gain in August over July. Unemployment, although still larger than a year ago, signaled some improvement. Department store sales improved on a seasonally adjusted basis during the summer months until recent weeks when some weakness has developed. Bank debits during August were off about 3 percent from year-ago levels but cumulatively, January through August, they were a plus 3 percent.

The district banking scene continues active with a strong demand for commercial and industrial loans and a growing volume of both demand and time deposits.

Economic activity at the national level has demonstrated an unusually strong recovery movement since last April—the month which many observers say marked the turning point in the 1957-58 recession. Since April, industrial production has regained more than half the loss suffered during the recession. In fact, it has come up faster this summer than it went down last fall and winter. Home building is up sharply. Personal income has risen to a new record high, with Gross National Product, the most massive measure of economic change, up over $3 billion during the second quarter. A higher level of new orders to manufacturers together with a decrease in inventory liquidation points optimistically towards a continuation of economic growth during the remainder of 1958. Furthermore, a reversal in the downtrend of expenditures for new plants and equipment is expected for the fourth quarter of 1958. Productivity, or output per man hour, is increasing rapidly. However, unemployment continues relatively high in spite of gains in production.

So far, fortunately, there is little evidence of any price inflation. Actually, the consumer price index in August showed the first inclination to decline since 1955 with lower prices for foods a contributing factor. Wholesale prices at mid-September were also below peak levels of recent months. As long as unemployment as a percent of the labor force remains relatively high and unused production capacity is available, any substantial price increases would appear to be unlikely.

The following selected topics describe particular aspects of the district's current economic scene:

EMPLOYMENT AND UNEMPLOYMENT

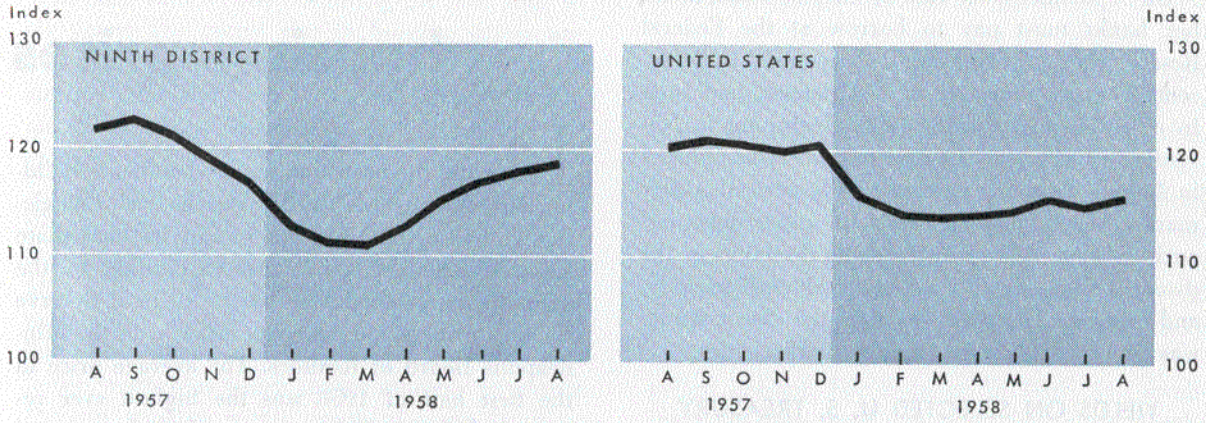
Employment during August in Ninth district nonagricultural establishments increased by 9,900 or .7 percent since last month, but it was 2.2 percent below the year-ago figure. As of August it is estimated 1,410,400 persons were employed in the district. Nonagricultural employment for the United States as a whole also was .7 percent higher in August this year than the previous month, but was 3.7 percent below August 1957. As illustrated in the chart, a more pronounced year-to-year decline for the nation than for the district has been characteristic so far this year.

Based on the July to August changes occurring during the years since 1948, an increase of .7 percent between July and August is about the 'normal' seasonal increase both for the district and for the nation.

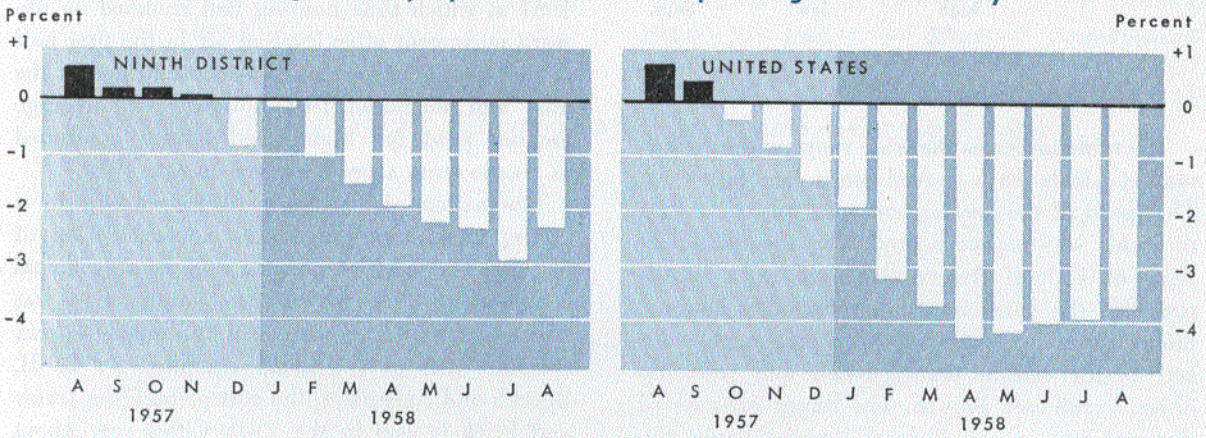
Although complete reports covering all portions of the district economy are not yet available, it appears that the major contributors to the em-

Index of nonagricultural employment, Ninth district and U. S., unadjusted

(1947-49 = 100)



Percentage change in employment from corresponding months of a year earlier



ployment increase were construction and manufacture of nondurables. Construction was stimulated by greater ease in the financing of residential building and by the federal highway construction program. Manufacture of nondurables increased principally because of seasonal factors in the food processing industries.

In evaluating shifts in unemployment in the district, it is necessary to rely on data for insured unemployment which excludes employees not covered by the unemployment compensation law. For the week ending August 30, 1958, insured unemployment in the Ninth district* was estimated at 37,351. This includes 9,876 persons who had exhausted regular benefits and were receiving extended benefits under temporary programs. Data from previous years suggest that there is usually a minor reduction in insured unemployment between July and August due to seasonal factors. This year, however, average weekly insured unemployment in August remained at about the July level.

*Includes only the four states fully within the Ninth district.

DISCOUNT RATE ELEVATED

On September 5 the rate of interest which member banks must pay to borrow at the Federal Reserve Bank of Minneapolis was raised to 2 percent. The previous rate of 1¾ percent had been in effect since April 18, 1958. Beginning in November of last year the discount rate was reduced in 4 steps from 3½ percent to 1¾ percent. Other market rates, such as yields on government securities, have moved in the same direction as the discount rate—down from last year until recently, and then up. The latest boost in the discount rate was preceded by rising money market rates.

YIELDS ON SELECTED U. S. TREASURY SECURITIES

	1957 high	1958 low	Mid-Sept.
Treasury bills	3.67%	.58%	2.33%
2½'s of 1961	4.18	2.06	3.45
3's of 1995	3.64	3.06	3.55

The table indicates the wide range within which market yields have moved since late last year. The speed of the decline and subsequent increase of yields was unprecedented. The several reductions of Federal Reserve discount rates, which preceded the latest increase, reflected a national monetary policy intended to complement other actions for ending the recession and restoring orderly economic growth. The recent increase of discount rates at all Federal Reserve banks followed the appearance of various signs that recovery had begun and that the threat of inflation had not vanished.

RECORD FARM INCOME IN SIGHT

Ninth district farmers are enjoying what may be a record income year. Cash receipts from farm marketings for the first 7 months of 1958 reached an estimated $1,674.7 million, 1 percent above the previous record established in 1948. Compared with a year ago, receipts for the district for the first 7 months of 1958 are up 9.5 percent.

Minneapolis area housing prices

During the past four years when home building was slack, prices paid by purchasers of single-family houses in Minneapolis and its immediate suburbs remained quite firm, according to the annual surveys conducted by the Federal Reserve Bank of Minneapolis in cooperation with the Minneapolis Board of Realtors. The average price in the first half of 1958 was the highest ever recorded, $15,500. This represented an increase of $200 over the average price in the latter half of 1957 at which time housing had resumed an upward movement after leveling off in the first half of that year. The increase was concentrated in the low- and medium-priced houses;* the average amount paid for high-priced houses continued to recede from a peak reached in late 1956.

Fluctuations in prices paid for houses in a metropolitan area are due to a combination of factors. The cost of construction is a principal one. During 1956 when home construction was slackening, building costs still continued to rise. On the basis of the index compiled by E. H. Boeckh and Associates, the cost of building frame and brick houses in the Twin Cities rose about 4 percent from 1954 to January 1957.

Beginning with 1957, building costs leveled off. According to the above index, the cost of building frame houses in the Twin Cities increased only slightly in 1957 and remained quite stable in the first half of 1958. The cost of building brick houses has risen more than that for frame houses; from January 1957 to July 1958 the increase was about 2 percent.

*Transactions included in the survey are divided into three brackets according to market price: the lowest 60 percent are classified as low-priced, the next 34 percent as medium-priced and the top 6 percent as high-priced.

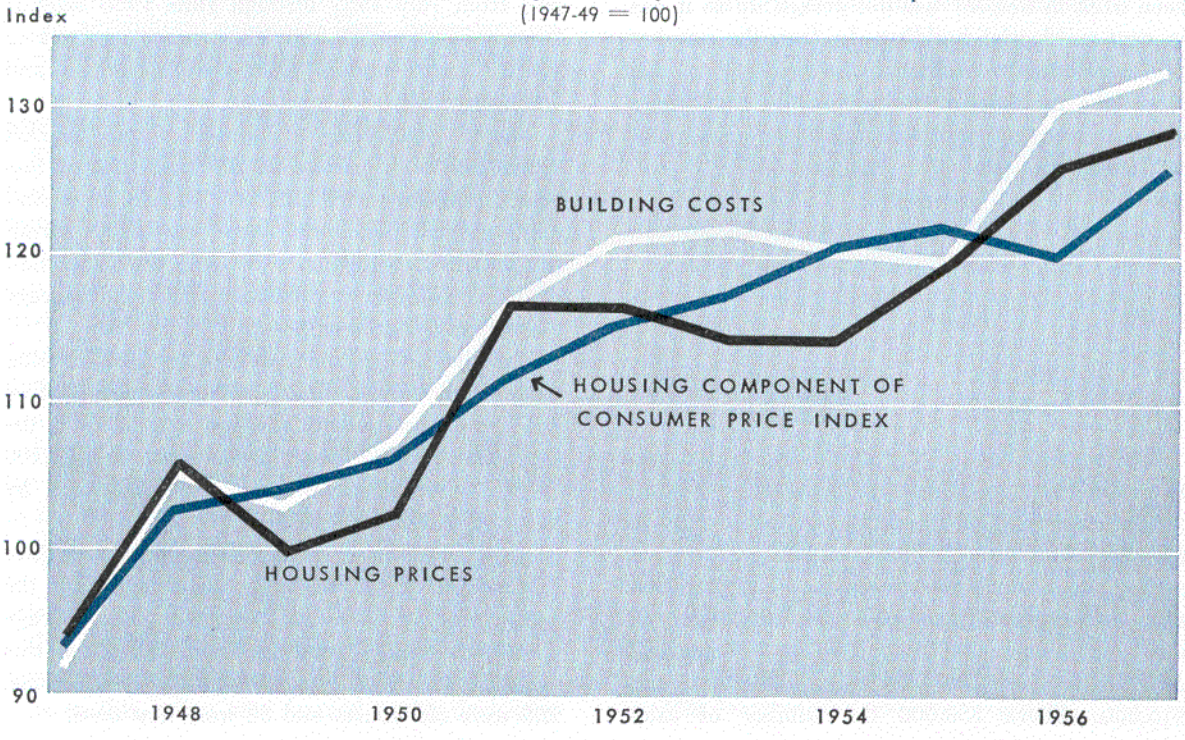
A second factor influencing housing prices has been the sharp rise in land values; in some suburbs land values doubled during the past four to six years. The recent rise in housing prices undoubtedly reflects still another factor—the inclusion of more built-in kitchen and laundry equipment, for which there has been a constantly increasing demand.

Consumer incomes, the economic outlook and the availability of mortgage credit are of prime importance on the demand side. During the 1957-58 recession, incomes of many consumers were maintained at high levels. Terms on mortgage loans were liberalized. Lower down payments and longer maturities which reduce monthly payments brought housing within reach of more families. It does not necessarily follow, however, that buyers were securing as much 'house' for their money as formerly. Liberalization of credit terms may have widened the market but it also may have been capitalized into prices.

The immediate increase in the number of new houses purchased indicates that the housing market apparently is not so saturated as was thought some time ago. Results of the survey tend to verify that when liberal credit terms are available, families are willing to pay higher prices for houses—at least in the low and medium-priced brackets. There was no detectable influence on the demand for housing in the high-priced bracket.

The demolition of an increasing number of substandard houses in Minneapolis also may have affected the average price paid in the low-priced bracket. For instance, in 1957, 518 dwelling units were razed and in the first eight months of 1958 another 214 units were removed in preparation for the construction of multiple dwellings and of new commercial structures. As a result of

Index of housing prices and comparative price data, Minneapolis area



these demolitions, fewer of the lowest priced houses were left on the market and this may have tended to push up the average price for the remainder.

Results of the survey

The latest annual survey on prices paid for houses in the greater Minneapolis area was completed in August. The current survey includes, with only a few exceptions, the same real estate firms as a year ago. The sample covers over 50 percent of all transactions in this area. As in previous years, cognizance was taken of the geographic location of these properties to insure a reliable measure of the trend of prices for all houses sold in the area.

In the recent survey covering July 1957 through June 1958, 4,144 transactions were included as compared with 4,702 transactions for the same period of the preceding year. Activity in the market for older houses (by definition those that have been lived in before) has not perked up as it has in new residential building. In fact, the number sold continued to decline in the first half of this year. The number of transactions in old houses in the current survey totals 3,595 compared with 3,804 one year ago.

AVERAGE PRICE OF HOUSES SOLD IN MINNEAPOLIS AREA

	Lowest 60%	Middle 34%	Highest 6%
1946	$ 7,900	$13,500	$21,500
1950	9,000	15,000	27,100
1954	10,900	16,700	30,300
1958	12,200	18,900	30,800

The over-all range of prices in the recent survey extended from $3,500 to $53,500. In the preceding survey, the range was from $3,000 to $74,000. The bulk of the transactions are, of course, in a much narrower range. Eighty percent of the transactions were concentrated within the bracket from $9,000 to $18,000 and one-half of the transactions fell within $10,000 and $15,000. Above $30,000 the number of sales tapered off sharply. The number of transactions in the $20,000 range has increased year after year.

The price range in the *low bracket* of the present survey extends approximately from $3,500 to $15,300. The number of transactions in this bracket total 2,496. Of this number, 2,168 were old houses and 328 were new ones.

The average price of houses sold in this bracket in the first and second half of 1957 stood at $11,900 and during the first half of 1958 rose to $12,200. This is the highest average ever recorded for this group. The increase occurred in both the prices of old houses and in those of new ones. The average price of old houses rose from $11,500 in both the first and second half of 1957 to $11,700 in the first half of 1958.

The average price of new houses has risen steadily over the years. In the latter half of 1957, it had risen to $14,800 and in the first half of 1958 to $15,000.

The price range of houses in the *medium bracket* sold from July 1957 through June 1958 extends from $15,300 to $25,500. The transactions totaled 1,410. Of this number 1,222 were old houses and 188 were new.

The average price of houses in this bracket again rose significantly in the first half of this year. Between the first half of 1957 and the second half, the average price rose by $200 (from $18,200 to $18,400) and between the latter half of 1957 and the first half of 1958, the average price rose by another $500.

The rise in the prices of new houses has been faster than on old ones. During the first half of 1957 as compared with the first half of 1958, the average price of new houses rose by $1,100 ($19,700 to $20,800) and on old houses by $700 ($17,900 to $18,600).

The average price of houses in the *high bracket* has receded further from the peak reached in the second half of 1956. In that period, the average price was $32,900 and in the first half of this year, $30,800. Out of a total of 238 transactions, 205 were old houses and 33 were new ones.

Dairying in the Ninth district

This second article in a series on dairying in the Ninth district will discuss dairying in the 'lake belt area' of Minnesota and Wisconsin. The first article in the July 1958 Monthly Review discussed dairying in the 'northern forest belt area,' the extreme northeastern portion of the district.

The 'lake belt area' of Minnesota and Wisconsin is the major dairy region in the Ninth district. Over half of the 1956 cash receipts from the sales of dairy products in the district accrued to lake belt farmers. In contrast, total agricultural receipts of the lake belt area accounted for only one-fifth of cash received from all farm marketings in the district in 1956.

The quarter billion dollars that lake belt farmers received for dairy products in 1956 amounted to 44 percent of their total receipts from the sale of all agricultural products. Thus, dairy farming is paramount to the agriculture of the lake belt.

Characteristics of the lake belt area

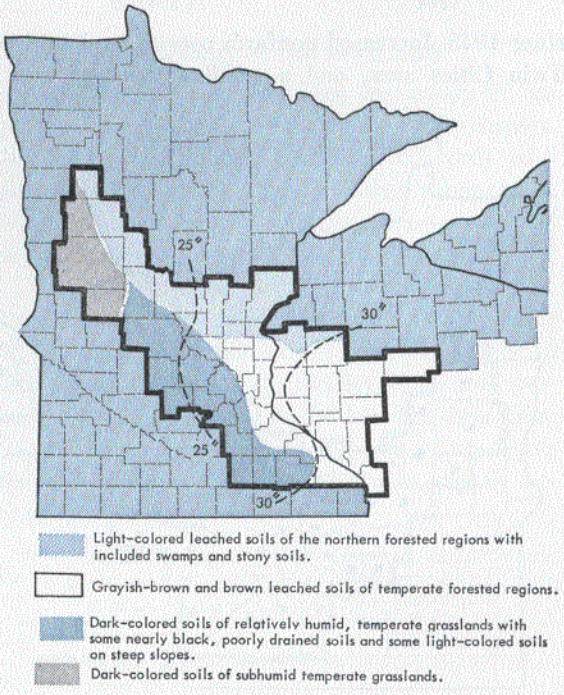
The land and climate of the lake belt are such that much of the cropland can be used most effectively in the production of roughages. However, the land resource of the lake belt area is extremely variable. The soils range from the relatively unproductive soils of the northern edge bordering on the forest belt area to the very productive soils on the southern edge of the lake belt area.

In the northern portion of the lake belt area the soils formed under coniferous forest. Similar to the adjoining forest belt, this part of the area is extremely varied in topography and is covered by soils which are thin, light and relatively infertile.

The topography of the Mississippi Valley portion of the lake belt area is rolling to steep. The soils in this valley area formed under deciduous forests and are quite shallow in many places and subject to erosion. Much of the valley area remains wooded, and careful cropping practices combined with a heavy use of roughages in the cropping rotation is required to maintain the soils.

The soils of the southern edge of the lake belt area formed under tall native grasses, with bluestem and bunch grasses predominating, but with native marsh grasses growing in the lowlands. Scattered hardwoods are found along the streams in the southern portion of the area. The topography of the southern portion is undulating to gently rolling with lighter soils found on the steeper slopes, and heavy black soils found in the depressions. Drainage is a problem in some parts of the southern portion of the area.

General pattern of great soil groups and average annual precipitation



The lake belt climate is cool, moisture is plentiful, and the growing season is relatively short, varying from 110 to 170 frost-free days. These climatic factors favor the production of roughages.

In the lake belt area the proportion of the land in farms ranges from a low of 21.3 percent in Ramsey county, Minnesota, to a high of 96.7 percent in Steele county, Minnesota. The lowest percentages of land in farms are found in the counties surrounding the Twin Cities metropolitan area where nonfarm uses of land have been taking an increasing share of the available land. And, along the northern edge of the lake belt area, the proportion of land in farms is low as is typical in the forest belt region.

The land in farms in the lake belt area increased between 1940 and 1945, and decreased somewhat since 1945. Increased nonfarm uses of land in the Twin Cities area, and a small amount of land abandonment in the northern portion of the area would account for the decrease.

LAND IN FARMS IN THE LAKE BELT AREA

Year	Acres
1940	15,732,000
1945	16,182,000
1950	15,981,000
1954	15,594,000

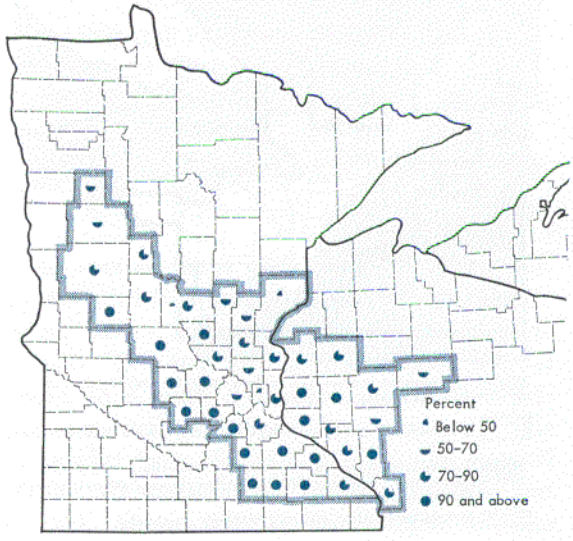
The number of farms in the lake belt area has been decreasing as farms have increased in size and other land uses have absorbed farms. Farm size remains relatively small in the lake belt area. In 1954 the average farm encompassed a total of 163 acres, 93 acres of which was in cropland. Slightly larger farms with relatively larger crop acreages are found in counties in the southern and western portions of the area.

Small farm size is conducive to an intensive type of farming because small farms have a large labor supply relative to land. Couple this fact with the high proportion of farm land that is suitable only to roughage production in the lake belt area, and we have some insight into the reasons for the

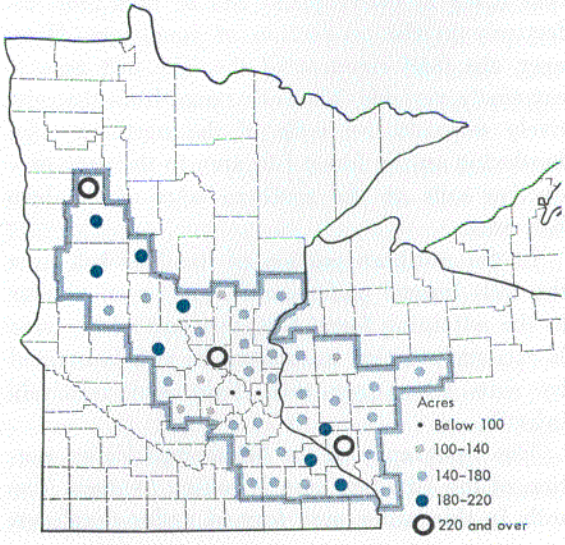
NUMBER OF FARMS AND AVERAGE SIZE OF FARM, LAKE BELT DAIRY AREA

Year	Number of farms	Average acres per farm
1940	115,030	137
1945	110,607	146
1950	104,639	153
1954	95,993	163

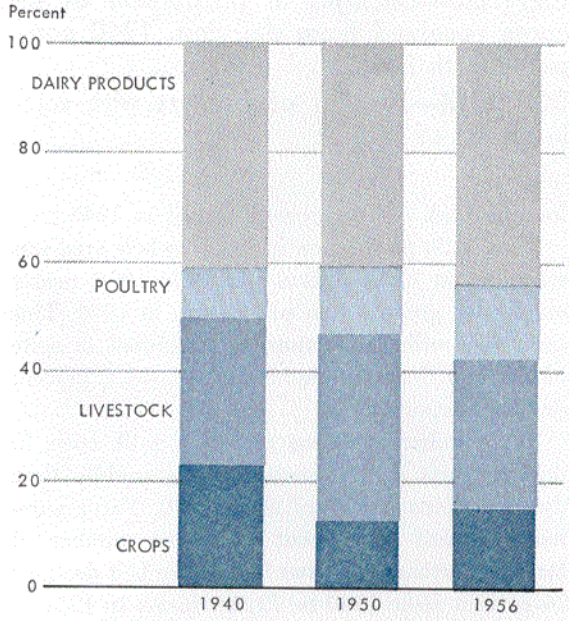
Percent of land in farms



Average size of farms



Proportion of farm income from various sources, central lake belt area



predominance of dairying in the lake belt area. The importance of roughage production to the agricultural economy of the lake belt area is indicated by the fact that approximately 49 percent of the total land in farms is devoted to hay and pastureland. Counties in the northern and eastern portions of the lake belt area tend to have a higher proportion of farm land devoted to the production of roughages (pasture, hay and silage) than the southern counties. The more productive soil and climatic conditions of the southern portion of the lake belt area allow a greater amount of farm land to be devoted to corn production.

Corn production in the southern part of the lake belt area facilitates livestock feeding; there is a greater concentration of hog production and beef feeding in the southern counties. Greater emphasis on corn and hogs reduces the relative importance of dairying in those counties.

According to the economic classification of farms included in the 1954 Census of Agriculture, 88.6 percent of the farms in the lake belt area were classed as commercial farms.[1] Approximately 40 percent of the commercial farms had gross sales of more than $5,000.

In the lake belt area only 15 percent of the farm operators received greater incomes from off-farm sources than they did from farm sources, compared with 45 percent in the northern forest area. A greater reliance on off-farm income is found among the farmers in that part of the area surrounding the Twin Cities where farms are smaller, many of them designed to be part-time farming units.

PERCENT OF FARMS IN EACH ECONOMIC CLASS, LAKE BELT AREA, 1954

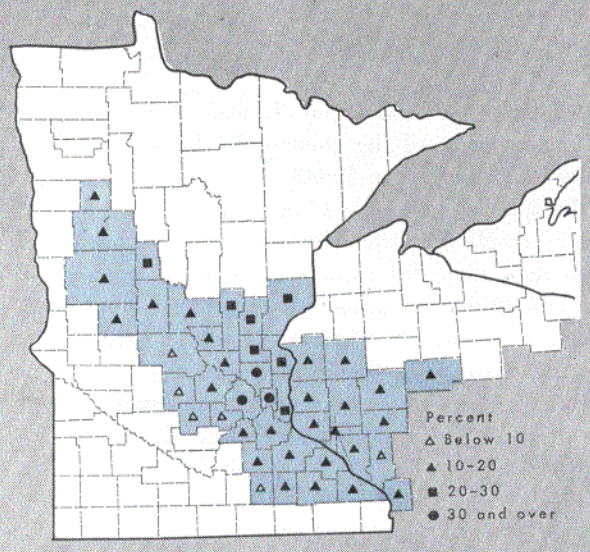
Values of farm products sold	Percent of farms
$25,000 or more	.9%
10,000 to $24,999	8.9
5,000 to $9,999	29.8
2,500 to $4,999	34.5
1,200 to $2,499	19.2
250 to $1,199	6.7
	100.0%

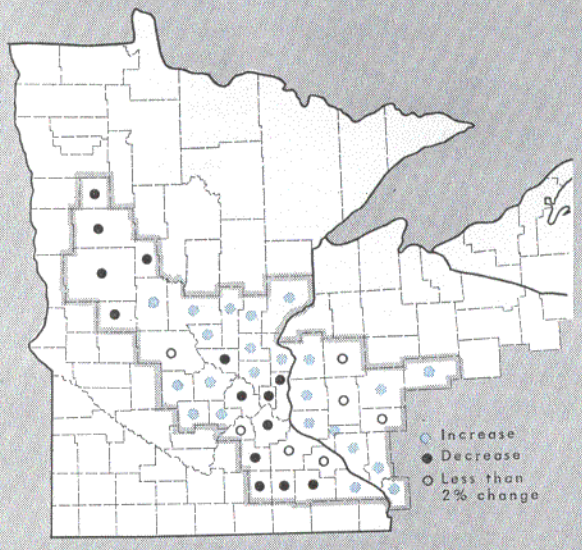
Trends in dairying in the lake belt

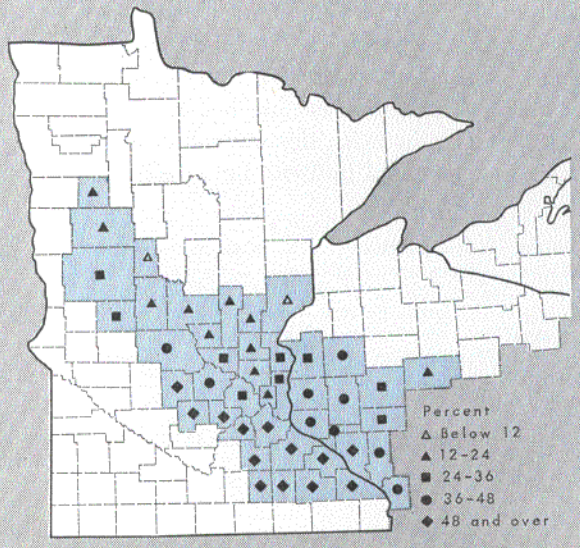
The lake belt area has been increasing in importance as the center of dairying in the district. In 1940 the lake belt accounted for only 37.5 percent of the total sales of dairy products by Ninth district farmers but the share expanded to 51.3 percent in 1956.

The major reason for the increasing *relative* importance of the lake belt area as the center of dairying in the district has been the decline in dairying in the rest of the district. Forty-four percent of the farm income in the lake belt area came from dairy sources in 1956; this was a little above the 41 percent recorded in 1940, but slightly be-

[1] In general, all farms with sales of farm products amounting to $1,200 or more were classified as commercial. Farms with sales valued at $250 to $1,199 were classified as commercial only if the farm operator worked off the farm less than 100 days or if the income of the farm operator and members of his family from nonfarm sources was less than the total value of all farm products sold.







TOP—Percent of farmers receiving income from off-farm sources which exceed sales of farm products.
CENTER—Changes in proportion of income received from dairying, 1940 compared with 1954.
BOTTOM—Percent of farmers with sales in excess of $5,000.

low the peak of 46 percent reached in 1945.

Total milk production in the lake belt area was estimated at 7,683 million pounds in 1956, nearly one-fourth greater than production in 1940. This increased milk production was achieved in spite of the fact that cow numbers declined 2 percent during the period.

The number of farms reporting milk cows in the lake belt area decreased more rapidly than did total farm numbers since 1940. Farm numbers declined 16 percent while the number of farms reporting milk cows in the lake belt declined 24 percent since 1940 to 79,359 farms in 1954.

During the period 1940-1954 the average number of cows per farm in the lake belt increased from 11.1 to 14.5. Although the lake belt area is the center of dairying in the district the dairy enterprise in the area continues to include a large proportion of relatively small herds. Among the

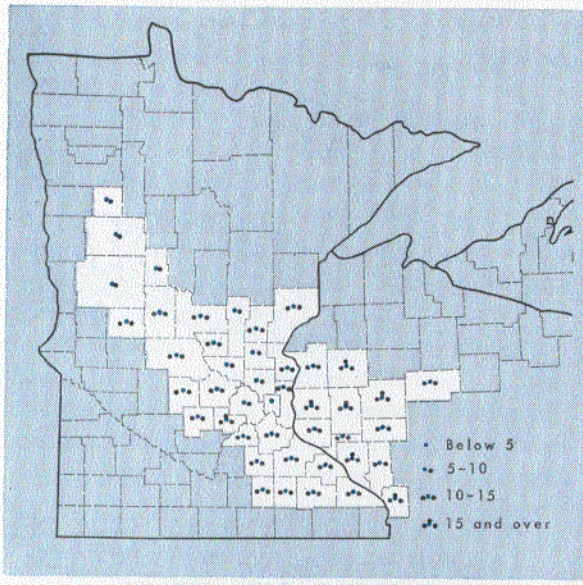
NUMBER OF FARMS REPORTING MILK COWS, NUMBER OF COWS, MILK PRODUCTION IN THE LAKE BELT AREA

Year	Farms reporting cows	Cows per farm	Production per cow	Total milk produced (million of lbs.)
1940	103,915	11.1	5,416	6,239
1945	99,253	12.8	5,503	6,973
1950	88,671	12.3	6,325	6,876
1954	79,359	14.5	6,495	7,470
1956			6,811	7,683

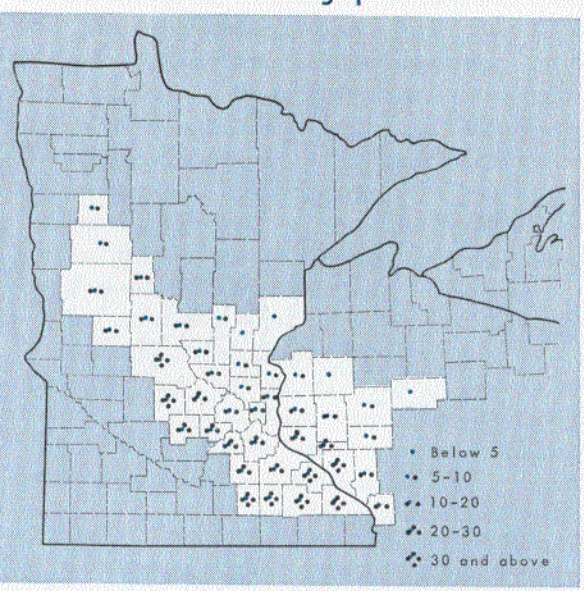
commercial farms in the lake belt, approximately 24 percent reported dairy herds of less than 10 cows in 1954 while only 5 percent of the commercial farms had herds that exceeded 30 cows.

Productivity has increased substantially in the lake belt area since 1940; average annual milk production per cow increased 26 percent from 5,416 pounds to 6,811 pounds of milk annually.

Number of cows per farm



Number of hogs per farm



DISTRIBUTION OF COMMERCIAL FARMS REPORTING MILK COWS ACCORDING TO HERD SIZE, LAKE BELT AREA, 1954

Herd Size (number of cows)	Number of commercial farms	Percent
Less than 10	17,734	23.9%
10 - 29	52,427	70.7
30 - 49	3,667	4.9
50 and more	364	.5
Total	74,192	100.0%

A large number of factors have contributed to this increased productivity per cow, but over-all it can mainly be attributed to the improvement in management as a result of increased specialization in dairying. Dairy breeding, feeding and culling programs receive more attention as the dairy herd increases in importance as a source of income.

The lake area has in total quite a diversified agriculture. Cash crop sales accounted for nearly 15 percent of the cash receipts in the area in 1956. In addition to dairying, the income from other animal product sales accounted for another 40 percent of the cash receipts in 1956. The fact that there is considerable diversity in the area's agriculture would suggest that the dairy enterprise in the lake area includes many small dairy herds that comprise a part of the livestock program on general livestock farms. This may explain in part why the average dairy herd hasn't increased in size any more rapidly than it has; and, likewise why the average production per cow hasn't increased any more rapidly than it has.

Changing production patterns

A review of the price trends in beef, pork and butterfat since 1930 indicates that beef and pork prices have risen relative to butterfat prices. In the period 1930-1934 the value of 354 pounds of milk was equal to 100 pounds of beef; in the 1940-1944 period 464 pounds of milk equaled the value of 100 pounds of beef, and in 1950-1954, 585 pounds of milk was worth the same as 100 pounds of beef.[2]

Technological advances with resulting cost decreases may have been somewhat greater in dairying than was the case in beef and pork production.

[2]Hartmans, E. "Minnesota's Dairy Situation," **Minnesota Farm Business Notes**, No. 395, May 26, 1958, page 2.

A comparison of changes in labor productivity on four different types of farms under study by the U. S. Department of Agriculture indicates that two selected groups of dairy producers have achieved greater increases in labor productivity than have two selected groups of hog and beef operators. The use of these data are very limited, however, because they are taken from a selected group of farms, and are not necessarily representative of dairy, hog or beef operations in general.[3] In the case of these selected farms, labor productivity increased 66 to 72 percent on the dairy farms compared with 30 to 38 percent on the beef and hog operations since the period 1947-49. In terms of the size of dairy herds these selected farms are considerably larger than the average of all farms in the lake belt area. In 1954 the western Wisconsin dairy farms and the southeastern Minnesota dairy-hog farms kept an average of 17.1 and 18.5 milk cows per farm, respectively, compared with 14.5 cows per farm for the entire lake belt area. Thus, it is likely that the average of all dairy farms in the area have not achieved similar gains in labor efficiency.

INDEX OF PRODUCTION PER HOUR OF LABOR (1947-49 = 100) IN FOUR TYPES FARMING OPERATIONS*

Years	Dairy-hog farms So. Minn.	Western Wisconsin dairy farms	Hog-beef raising corn belt	Hog-beef fattening corn belt
1937-41	82	81	78	77
1947-49	100	100	100	100
1954	149	135	102	118
1955	158	148	124	119
1956	165	161	132	120
1957	166	172	138	130

*Agriculture Information Bulletin No. 176, U. S. Department of Agriculture, Agricultural Research Service, Washington, D. C., June 1958, pp. 48-52.

The relative changes in the prices of milk and beef indicate a very wide disadvantage to milk. It is likely that this wide price disadvantage for milk noted over time has not been completely offset by production cost decreases in dairying and that dairying has suffered in profitability in relation to the beef and pork enterprises.

Changes in production patterns emerge slowly in response to changes in the relative profitability of alternatives. This is particularly true in dairying where it takes several years to build up a good dairy herd. A sizable proportion of the

[3]For a detailed discussion of the farms included in the study, see Statistical Bulletin 197 and Agricultural Handbook 118, Volume 3, U. S. Department of Agriculture, Agricultural Research Service, Washington, D. C.

building and equipment in dairying cannot be used or is not readily adaptable to other lines and thus, the dairyman will tend to continue in dairying as long as he can cover 'out-of-pocket' costs. Further, the technical 'know-how' limitations of dairy operators relative to other enterprises will to some extent essentially force them to remain in dairying at somewhat lower labor returns. Thus, several factors tend to resist changing production patterns even where changes are possible.

Furthermore, the extent and rate of change among enterprises in response to changes in relative profitability will vary considerably among areas. In areas where the productive resources can be more easily shifted to alternative uses greater changes can be expected and these changes will occur more rapidly than in areas where the alternatives are poor or essentially nonexistent.

Some changes in production patterns have occurred in the lake belt area since 1940. An indication of those changes is noted in terms of the changes in the proportion of cash receipts received from dairying in 1940 compared with 1954. (See chart on page 10.)

The areas with greatest opportunity to shift resources to alternative uses exist along the southern and western edges of the lake belt area. In the counties of Steele, Rice, Dodge and Olmsted in Minnesota, the proportion of cash receipts from dairying declined since 1940, while cash crops increased in relative importance. Considerable acreages in these counties have been shifted to the production of soybeans since 1940.

The northwest counties included in the lake belt area registered declines in the proportions of cash receipts received from dairying since 1940, and increases in the proportion of cash receipts from the sale of livestock and poultry products. A large turkey industry has been developing in that area.

Some of the counties which have registered increases in the proportion of cash receipts from dairying are counties which have few good alternative enterprises, such as the northeastern counties bordering on the northern forest area.

Most of the other counties which have registered increases in the relative importance of dairying are those counties included in the supply area of the Minneapolis-St. Paul fluid milk market or other Grade A milk markets. Dairy producers selling through fluid milk outlets obtain better prices than producers selling through manufactured milk product outlets.

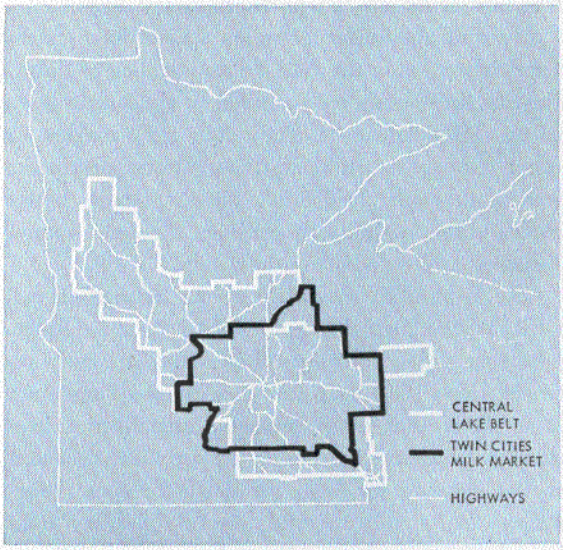
The urbanized counties in the immediate vicinity of the Twin Cities have had more rapid declines in dairy farming as a source of cash receipts since 1940 than in other types of farming. It is likely that more intensive agricultural production programs than dairying are more resistant to the demand for land for nonfarm uses. Vegetables, fruits, flowers and possibly poultry hold land in farming longer than dairying and, therefore, have increased in relative importance in this area.

Twin Cities' fluid milk market

The milk supply area for the Twin Cities market lies almost entirely within the boundaries of the lake belt area. The Twin Cities milk market is operating under a Federal Market Order.

The Twin Cities milk market producers accounted for approximately 10 percent of the total milk produced in the lake belt area throughout the decade prior to 1956. The supply of milk moving into the Twin Cities market under the federal order has been maintained at nearly a uniform level relative to the demand for Class I milk (milk for bottling fluid use) during the recent 10-year period (1946-1956). This is indicated by the fact that the proportion of fluid milk purchased from producers for fluid use has remained relatively constant during the period. Approximately 60 percent of the total milk received under the federal order has been purchased as Class I milk with two exceptions: in 1955 and 1956, 74.5 percent and 67.3 percent, respectively, were purchased for Class I use.

Supply area of the Twin Cities milk market



Total production of milk for fluid use under the Minneapolis-St. Paul Federal Market Order increased 17 percent between 1946 and 1956. During the same period milk production increased approximately 7 percent among lake belt milk producers not operating under the Twin Cities Federal Market Order.

The production adjustments made by the individual producers supplying the Twin Cities market are significant. The number of producers in the market declined from 6,383 in 1946 to 3,720 in 1956; a drop of over 40 percent. During the same period, the average production per producer doubled, from 105,000 pounds to 209,000 pounds of milk annually.

TOTAL MILK PRODUCTION, NUMBERS OF PRODUCERS AND AVERAGE PRODUCTION PER PRODUCER, TWIN CITIES FLUID MILK MARKET

Year	Total milk produced (millions lbs.)	Number of producers	Pounds of milk per producer
1946	668.3	6,383	104,707
1950	681.1	5,788	117,683
1954	747.2	5,140	145,368
1956	782.1	3,720	208,558

In comparison, the average milk production per producer in the lake belt area outside of the Twin Cities milk market increased from 70,000 to 94,000 pounds during the 10 years prior to 1956; this amounted to an increase of only 34 percent. It is important to bear in mind, however, that the Twin Cities milk market producers are a group of specialized dairy operators, in contrast to the heterogenous group of farms who are included in the total of all farmers that report keeping milk cows. The specialized dairy operators producing milk outside of the fluid market for manufacturing purposes have probably shown far more rapid growth in size than the 34 percent indicated for the total of all farms reporting milk cows. It is, however, probable that the Twin Cities fluid milk producers have grown more rapidly than specialized dairy producers supplying the manufactured product outlets. Part of the reason is that pressure to enlarge is greater to compensate for the costs of the more stringent production standards and for the frequent required changes in milk handling methods and equipment in Grade A fluid milk production.

Dairying in the lake belt—1975?

Projections of the dairy business in the lake belt area, based on past historical trends, may be valuable in indicating the direction of movement of the industry in future years. The framework of the projections, and the projected demands for dairy products, which are applicable here, were discussed in some detail in the first article on *Dairying in the Ninth District*, Monthly Review, July 1958.

The proportion of total U. S. milk production produced in the lake belt area has been very close to 6 percent since 1940. Milk production projected for the lake belt area was based on a continuation of this historic relationship.

The number of farms with dairy cows projected for the lake belt area through 1975 based on the trend established since 1940 indicates that the

PROJECTED TOTAL MILK PRODUCTION IN THE U. S. AND THE LAKE BELT AREA

Year	U. S. (Billions of pounds)	Projected production of milk lake belt area (Percent of total)	(Millions of pounds)
1960	131.2	6.0	7,872
1965	141.8	6.0	8,508
1970	154.0	6.0	9,240
1975	168.5	6.0	10,110

number of these farms will decline to 40,262 by 1975.

A projection of milk produced per farm can be derived from the projections of total milk production and farms keeping milk cows. Milk production per cow for the lake belt area for 1975 is projected to 8,657 pounds annually, based on the trend in productivity established during the period 1946-1956. The number of cows per farm projected through 1975 indicates 29 cows per farm in that year.

The decline in the number of farms with dairy cows has been more rapid than the decline in farm numbers in the area. The total number of farms in the area estimated for 1975 is 68,500; this is based on a projection of the rate of decrease during the period 1940-1954.

These projections are straight line projections of historical trends and as such they may miss the mark by a wide margin. Any number of possible changes in production techniques, price relationship or cost structures that may influence future production patterns can obviously not be accounted for in such projections. A brief review of some of the factors that may cause the future of dairying in the lake belt to deviate from these projections may be useful.

The trend in dairy farming generally in recent years has been toward more specialization. Producers continue to increase their investment in facilities such as forage harvesters, milking parlors, bulk milk facilities, and pipeline milkers. As the use of these new labor saving techniques becomes more widespread, and as others are introduced, the average size of dairy herd that the individual producer will be able to handle will be increased substantially. Thus, the 1975 projection of 29 cows per farm for the lake belt is undoubtedly conservative.

Dairy herd management will improve as herds increase in size with the result that productivity per cow will likely increase more rapidly in the future. More widespread use of improved breeding stock through artificial insemination coupled with more careful culling programs will be one

PROJECTED NUMBER OF FARMS WITH MILK COWS, MILK PRODUCED PER FARM, PRODUCTION PER COW AND NUMBER OF COWS PER FARM

Year	Number of farms	Number of cows per farm	Production per cow (pounds)	Milk produced per farm (pounds)
1960	68,777	16.0	7,188	114,457
1965	59,272	18.7	7,678	143,542
1970	49,767	22.7	8,167	185,665
1975	40,262	29.0	8,657	251,105

way that management will be able to increase productivity. Further, better feeding programs will be implemented as management pays more attention to costs and returns of the dairy enterprise. The quantity of concentrates fed is apt to increase, and the quality of roughages will be improved as more widespread use is made of harvesting techniques that preserve the maximum amount of nutrients in roughages.

There is considerable diversity in the agriculture of the lake belt area — particularly in the southern and western counties. And, to the extent that alternative enterprises become more profitable than dairying there will tend to be shifts away from dairying. The evidence along these lines is not conclusive, however, and considerable further investigations are necessary to determine the trends in the competitive relationships between dairying and other livestock enterprises.

The portion of the lake belt dairy enterprise that supplies milk to the fluid markets will be

expected to grow in line with the growth of population in those markets. The specialized fluid milk market producers will probably continue to outpace the manufactured milk market producers in herd size and productivity per cow. They are influenced by greater cost pressures brought about by regulations governing milk production that force more rapid expansion. Also, the higher price they receive for milk induces them to concentrate a greater share of their productive resources to milk production at any given time than is the case with the manufactured milk producers.

Producers in portions of the lake belt that border on the northern forest area have few if any good alternative uses for their resources outside of dairying. This area will continue to experience changes similar to parts of the lake belt; the numbers of producers will decrease, herd size will increase, and productivity per cow will increase. However, to the extent that producers in that portion of the area find dairying a less profitable use of their labor they will shift out of agriculture.

Summary and conclusions

The lake belt area is the dairy center of the Ninth district—over half of the sales receipts of dairy products accrued to the farmers of the lake belt. Because of the existing land, the cool climate, plentiful rainfall and a relatively short growing season, nearly 50 percent of the farm land is devoted to the production of roughages.

Farms in the area are small, averaging 163 acres and as a result the labor supply relative to land is large. Couple this labor situation with heavy emphasis on roughage production and we have the major factors responsible for the importance of dairy farming in the area.

New technical developments have influenced every phase of dairy farming from the harvesting and handling of the dairy cow feed to the handling of milk. These developments have fostered an age of specialization in dairying. Dairy farms have been decreasing in numbers, even more rapidly than other types of farms. At the same time dairy herds have been growing in size and productivity has been increasing. In the lake belt area since 1940 the proportion of farms keeping milk cows declined from 90 percent to 83 percent of all farms in the area. Also since 1940, herd size in the lake belt increased from an average of 11.1 to 14.5 cows, and productivity increased 26 percent to an average of 6,811 pounds of milk per cow annually.

Projections of recent trends in dairying in the lake belt to 1975 indicate that if production conditions of the last ten years are maintained, dairy farmers in the area will produce a total of 10,110 million pounds of milk. The average dairy farmer will have 29 cows and the annual production per cow will reach 8,657 pounds of milk.

These trends indicate the general direction that dairy farming will move in the lake belt. The pressures toward specialization and increased herd size brought about by changing technology and market requirements are likely to continue. Furthermore, specialization focuses greater attention on management of the dairy herd, which means greater attention devoted to factors bearing on productivity. Thus, improved feeding, breeding and culling programs are apt to cause productivity per cow to increase at even a more rapid pace in the future. By the same token the pressures for increased herd size to reduce per unit costs may cause herd size to increase more rapidly in the future.

To the extent that dairy farming decreases in profitability in relation to alternative enterprises there may be further shifts out of dairying in some areas. The areas best adapted to alternative enterprises in the lake belt are the counties on the southern and western edge of the area where corn production can provide a basis for livestock production or where land may be shifted to cash crops such as soybeans; it is in these parts of the lake belt where dairy farming may decrease.