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AGRICULTURAL EXTENSION DIVISION  
UNIVERSITY OF MINNESOTA

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MINNESOTA FARM BUSINESS NOTES

No. 165

September 20, 1936

Prepared by the Division of Agricultural Economics  
University Farm, St. Paul, Minnesota

SOME ECONOMIC ASPECTS OF THE CHEESE INDUSTRY IN MINNESOTA

Prepared by W. Bruce Silcox

The production of cheese in Minnesota in 1935 was 11,058,967 pounds from which a little more than one and one-half million dollars were realized. There are 60 cheese factories in the state, located in 21 counties. The thirty-six factories, located in Dodge, Goodhue, and Olmsted Counties produced approximately 80 per cent of the cheese made in Minnesota in 1935. This discussion includes some results of a survey of the operations of 20 cheese factories located in these three counties. The number studied represents over 50 per cent of the cheese factories in the three counties indicated, and one-third of all the cheese factories in the state.

In terms of milk equivalent, number of pounds of product manufactured, and amount of sales, cheese factories, on the average, are from one-quarter to one-half the size of creameries in the state. In general, they are small frame buildings located less than four miles apart. Most of the factory buildings included in this survey have been in use over 20 years. Much of the equipment which comes in direct contact with the milk or cheese in a number of factories has been retinned, repaired, or replaced during the last two years. There is opportunity for further improvement in this respect, however, at a number of factories.

Business Organization

Nearly two-thirds of the cheese factories in the state are owned cooperatively by farmers, most of whom are patrons of these plants. Of the 20 factories included in this survey, 13 were cooperatively owned. Over half of the cooperative organizations studied were more than 25 years of age. Definite information concerning the status of incorporation was not available at all factories. As in the case of other cooperative organizations, cheese factories should maintain their corporate status for the protection of stockholders.

The number of stockholders at cooperative factories included in this survey varied from 10 to 66 and averaged less than 30 per factory. The most common par value of the shares of stock was from 25 to 50 dollars although at three factories the par value was over 100 dollars. Dividends on capital stock were declared at three factories only in 1935, the customary rate being six per cent. In general the associations studied carry no substantial burden of debt.

Cheesemakers in Minnesota generally are men of considerable practical experience in making cheese. The range in experience of cheesemakers at factories studied varied from 2 to 25 years, the average being approximately 15 years. Opportunities for special training in most cases have apparently been somewhat limited as indicated by the fact that out of 20 operators, only three had special scientific training. The average wage of cheesemakers included in this survey during 1935 was approximately \$90.00 per month. In addition to their monthly wage, many cheesemakers were provided with living quarters, milk, cheese, and, in some cases, incidentals

such as garden space, fuel or telephone.

One phase of business organization which is distinctly in need of improvement is the manner in which the accounts for the factories are kept. At only one factory included in this survey have the books ever been audited by an auditing agency. Officers and directors of cooperative associations are becoming aware of the necessity for more adequate accounting systems than are in use at present.

#### Production Highly Seasonal--Farmers Haul Milk

Receipts of milk at cheese factories are very irregular and highly seasonal. At some factories receipts of milk in June were over six times as high as in January. The general practice, however, has been to operate the factories the year round with smaller factories making cheese every other day for three or four months during the winter, depending on the volume of milk being delivered. Since most of the patrons live within two miles of the factory, the custom is for patrons to haul their own milk. At some factories a large proportion of the milk is transported less than one mile. Larger dairy plants that use commercial trucks in assembling milk have an inducement to offer farmers through the service of hauling milk directly from the farms. Although some farmers in the cheese producing area in Minnesota have taken advantage of the opportunity to eliminate the inconvenience of hauling, comparatively few have switched their patronage from the cheese factory for that reason. Somewhat the same situation exists in connection with the matter of washing cans, a service which is usually rendered by creameries, condenseries and milk plants but not by cheese factories. It is not unlikely as time goes on that greater importance may be attached to these services by producers. In fact, they may definitely seek them. At present, no patronage contracts are drawn between producers and local cheese factories which leaves producers free to market their milk where they choose.

#### Curing Facilities Limited

The facilities for curing and storing cheese at the majority of factories are limited both in kind and in extent. Temperature and humidity within most curing rooms are not easily regulated. The temperature of cellars where cheese is held prior to leaving the factories varies in numerous instances from below freezing, unless heated in winter, to 85-90° F., in summer. In some cellars the ventilation and drainage are poor, resulting in a condition of dampness which encourages the growth of mold. Facilities for storing during the flush season particularly are limited, as during that time the capacity for holding cheese at a number of plants is reached in from two to four days. The general practice in the industry in summer is for the cheese to be taken from the plants at least every other day and delivered to either the central cooperative marketing agency or to private dealers in Pine Island.

At most of the factories included in this survey a small percentage of the cheese sold in 1935 graded 93 score. By far the largest percentage of cheese made in the same factories was reported to have been sold as State grade cheese. At a few factories most of the cheese graded Standard. Very little cheese made in these factories graded Commercial or Undergrade. At two factories which averaged over 50 per cent 93-score cheese for the year the higher quality as compared with other factories was definitely reflected in greater returns per pound of cheese. This suggests the possibility of increasing the returns to producers by improving the quality of the raw material and the methods of manufacturing and handling.

#### Prices Paid Patrons Compare Favorably with Creamery Returns

The average price paid producers per hundred pounds of milk in 1935 at factories included in this survey was \$1.23. The average price paid for butterfat was 37.4 cents per pound. At creameries in the state the average price paid producers for butterfat in 1935 was 31.7 cents per pound. The higher average price paid patrons

for butterfat at cheese factories compared with creameries in the state for 1935 may be accounted for in part by the rather unusual relationship which existed between cheese and butter prices during a part of 1935 and the fact that, in general, at cheese factories whole milk rather than cream is delivered. Because of the possibility of shifting production somewhat from one branch of the industry to the other in sympathy with price relationships, the tendency is for prices to producers at creameries and cheese factories to approximate each other in the long run.

The usual method of handling the whey at cheese factories is to separate the whey cream leaving the remainder of the whey to be returned to the farm. Net receipts to cheese factories for whey cream in 1935 averaged approximately seven per cent of the total receipts from the sale of cheese and whey cream, and were equivalent to nearly 60 per cent of the actual operating expenses of the factories.

#### Volume of Business Important

When the factories studied were ranked according to the number of pounds of cheese made in 1935 and divided into two even groups, the larger factories were found to average a higher return to patrons than the smaller. When closer attention is given to size of factory and the data for the four largest and the four smallest compared, the difference in the returns to patrons was 1.1 cents per pound butterfat, or the equivalent of about 3 cents per hundred pounds of milk, indicating the importance of volume of business on returns to producers.

The average direct cost of making cheese in the factories studied was 1.7 cents per pound, of which .57 cents was for labor and .21 cents was for fuel. In each of the three items indicated, the costs were lower at the larger factories. These results agree with those of recent studies of creamery operations which revealed a close relationship between volume of business, per unit cost of production and net returns to producers.

#### Conclusions

While competition for milk among cheese factories in the past has not been especially keen, this survey shows that at over half of the factories other types of dairy organizations send trucks for milk and cream into the territory served by certain cheese factories. As further improvement in highways takes place and the trucking movement expands, the small factory will face increasingly severe competition and must watch all opportunities for efficiency and service if it is to maintain its place in the industry.

Figures presented herein point to the effect of the size of the plant on the cost of manufacturing cheese and the returns to patrons. All things considered, it is evident that more factories exist than are necessary to serve the principal cheese producing region adequately. Over two-thirds of the factories surveyed are considered to be in fair to poor condition and will soon reach the point where extensive if not complete replacements are necessary. Some of the better plants are not operating at manufacturing capacity, and certain equipment which is now used and in good condition could be used to good advantage in larger plants. Larger factories would enable the employment of better skill in manufacturing, and facilitate the introduction of a number of economies in cheese factory operation. As replacements of physical facilities in the cheese industry become necessary, attention should be given to the desirability of abandoning the smaller, less economical units or combining them into larger, more efficient enterprises. The concentration of a large part of this industry in a relatively small area should facilitate this development.

MINNESOTA FARM PRICES FOR AUGUST 1936  
Prepared by W. C. Waite and W. B. Garver

The index number of Minnesota farm prices for the month of August 1936 was 97. When the average of farm prices of the three Augusts 1924-25-26 is represented by 100, the indexes for August of each year from 1924 to date are as follows:

August 1924 - 95	August 1931 - 55
" 1925 - 105	" 1932 - 41
" 1926 - 100	" 1933 - 54
" 1927 - 100	" 1934 - 72
" 1928 - 100	" 1935 - 71*
" 1929 - 104	" 1936 - 97*
" 1930 - 81	

\*Preliminary

The price index of 97 for the past month is the net result of increases and decreases in the prices of farm products in August 1936 over the average of August 1924-25-26 weighted according to their relative importance.

Average Farm Prices Used in Computing the Minnesota Farm Price Index,  
August 15, 1936, with Comparisons\*

	Aug. 15, 1936	July 15, 1936	Aug. 15, 1935	Av. Aug. 1924-25- 26	% Aug. 15, 1936 is of July 15, 1936	% Aug. 15, 1936 is of Aug. 15, 1935	% Aug. 15, 1936 is of Aug. 15, 1924-25-26
Wheat	\$1.23	\$1.11	\$ .99	\$1.38	111	124	89
Corn	.99	.69	.67	.94	143	148	105
Oats	.38	.32	.22	.35	119	173	109
Barley	.93	.58	.32	.60	160	291	155
Rye	.69	.60	.31	.81	115	223	85
Flax	1.93	1.87	1.37	2.24	103	141	86
Potatoes	1.70	.95	.42	1.17	179	405	145
Hogs	10.10	9.30	10.70	10.58	109	94	95
Cattle	5.60	5.90	6.70	6.08	95	98	92
Calves	7.10	7.30	7.20	8.67	97	99	82
Lambs-sheep	8.00	8.42	6.92	11.06	95	116	72
Chickens	.135	.14	.125	.182	96	108	74
Eggs	.205	.181	.208	.26	113	98	79
Butterfat	.37	.34	.24	.41	109	154	90
Hay	9.68	7.02	6.32	11.60	138	153	83
Milk	1.96	1.69	1.51	2.13	116	130	92

\*Except for milk, these are the average prices for Minnesota as reported by the United States Department of Agriculture.

Indexes and Ratios of Minnesota Agriculture\*

	Aug. 1936	July 1936	Aug. 1935	Av. Aug. 1924-26
U. S. farm price index	88.0	83.0	75.0	100.0
Minnesota farm price index	97.0	86.0	71.0	100.0
U. S. purchasing power of farm products	106.0	103.0	89.0	100.0
Minnesota purchasing power of farm products	117.0	107.0	83.0	100.0
U. S. hog-corn ratio	9.5	11.4	12.6	11.4
Minnesota hog-corn ratio	10.2	13.5	16.0	12.3
Minnesota egg-grain ratio	11.6	12.6	16.4	14.2
Minnesota butterfat-farm-grain ratio	24.3	30.6	30.9	32.4

\*Explanations of the computation of these data are given in Farm Business Notes No. 144.