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Dairying in Minnesota

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terest and value to teachers in all parts of Minnesota, but especially to those in the surveyed counties: Becker, Beltrami, Clay, Clearwater, Hubbard, Kittson, Mahnomen, Marshall, Norman, Polk, Pennington, Red Lake and Roseau, and the adjacent parts of Cass, Crow Wing; Koochiching, Ottertail, Wadena and Wilkins.

The maps prepared by the Bureau of Soils may be secured by writing your member in Congress. Those already published include the following counties or parts of counties: Blue Earth, Goodhue and Rice; Carlton (in part) Crookston Area (southwest part of Polk) and Marshall Area (central part of Lyon). Pennington and Ramsey counties have been surveyed but the reports are not yet published. On these a scale of one mile to the inch is used which is sufficient to show on individual quarter sections the various soil types when these occur in areas of less than 10 acres.

No soil survey work is being conducted in the state at the present time. Beginning with 1915, the U. S. Department of Agriculture discontinued soil survey work in all states which do not contribute to the expense of the work. A bill introduced in the last Minnesota legislature providing an appropriation for soil survey work failed to pass. It is hoped that the next legislature will make an appropriation so as to permit of cooperation with the U. S. Bureau of Soils in the continuation of the detailed survey of individual counties.

MINNESOTA

DAIRYING IN MINNESOTA

By R. M. Washburn

University of Minnesota

IN the matter of production of butter and cheese, Minnesota ranks third in the United States, following Wisconsin and New York. Every state may be said to be possessed of certain advantages for certain crops; and the production of wheat, oats, and flax were the crops which the fertile soil, abundant rain-fall, and comparatively level land of Minnesota encouraged.

The fertile, rolling fields of southern Minnesota were settled in the late 40's and the 50's, and wheat at once became the chief and almost only crop raised. So great was the production of this single crop that at one time the little city of Red Wing was said to be the largest primary wheat market of the world. The constant draught upon the soil, however, began to show its effects as early as 1870, and became pronounced by 1890, even though new fields had been brought under the plow. The central and western portions of the state were settled at a little later period but followed largely the lead of the farmers farther south. The immense quantities of small grains produced soon began to tell upon the fertility to such an extent as to cause some alarm. It was evident that a more rational system of farming was necessary. At this time, about 1890, by far the majority of the farms were mortgaged heavily.

Distribution and organization of creameries, skim stations, and cheese factories in Minnesota in 1909. (From Robinson's "Economic History of Agriculture in Minnesota." University of Minnesota Studies in the Social Sciences, Number 3.)

Then, to make matters yet worse, the chinch bug appeared with its devastating attacks.

THE RISE OF THE ANIMAL INDUSTRIES

It was at this juncture that interest in live stock, especially cows and hogs, became keen. The cattle then kept were of a mediocre beef variety and yielded little better than 125 pounds of butter per year, even when handled and milked with reasonable care. Butter was made at home to some extent

Butter and cheese per capita production of country population, including both farm and factory product, in Minnesota, 1850-1910. (From Robinson's "Economic History of Agriculture in Minnesota." University of Minnesota Studies in the Social Sciences, Number 3.)

but this was of indifferent grade, exceedingly un-uniform in character and commanding very low price. A few creameries had been started but these were of the so called gathered-cream sort and made poor butter.

In 1890 the first co-operative creamery of the state was started at Clark's Grove, Freeborn County. The form of organization of this association was unique at that time in dairy or agricultural matters. First, the cost of construction of the plant was paid from a sinking fund made up by withholding a fraction of a cent per pound of butter from each and every patron delivering milk to the plant, thus the cost was pro-rated against the farmers according to benefit received. Second, the distribution of all surplus was made pro-rata

according to patronage, thus encouraging production. Third, each man owning stock in the company had but one vote regardless of the number of shares held. This was done to discourage any individual endeavoring to acquire control of the business. These three principles have stood as the foundation upon which 625 co-operative creameries of the state have been builded.

Once the practicability of the co-operative creamery was demonstrated, growth in dairying was rapid. From the start the growth of the industry has been natural, and comparatively few of the ill-advised "promoted" creameries have been built. Both the growth of the co-operative creameries on a sound co-operative basis and the check of the over-zealous creamery promoter is due in a large measure to the influence of the State Dairy School which was organized in 1892 and which has since given instruction to more than 2000 students.

The majority of the creameries are located in the southern portion of the state, though prosperous plants are now in operation throughout the western prairie counties as well as in the more northern wooded sections. Ottertail County leads the state in total number of creameries, there being thirty within its borders, with more than \$900,000 paid out annually to its farmers. The little village of Milaca in Mille Lacs County boasts of having the largest co-operative creamery in the state. This association pays out to the surrounding producers more than \$300,000 annually.

HIGH QUALITY OF THE BUTTER

This state is particularly proud of its record in the matter of winning first prizes at national and inter-national contests in creamery butter. The following is a list to date of the prizes won in open competition with the butter makers of the United States and Canada:

<i>Year</i>	<i>Convention held</i>	<i>Prize won</i>
1899	Topeka, Kansas, N. C. B. A.,	\$100, Silk Banner.
1901	St. Paul, Minn., N. C. B. A.,	\$100, Silk Banner.
1902	Milwaukee, Wis., N. C. B. A.,	\$100, Silk Banner.
1904	St. Louis, Mo., World's Fair,	grand prize diploma, awarded state or country with largest percentage of scores of 95 or better.
1906	Chicago, Ill., N. C. B. A.,	\$100, Silk Banner.
1908	St. Paul, Minn., N. C. B. A.,	\$100, Silk Banner.
1909	Milwaukee, Wis., N. C. B. A.,	\$100, Silk Banner; 96.53, average of ten highest entries from state; 95.86, Wisconsin, next highest.
1910	Chicago, Ill., N. C. B. A.,	\$100, Silk Banner; 95.86 average of ten highest entries from state; 95.69, Wisconsin, next highest.

- 1911—Chicago, Ill., N. C. B. A., \$100, Silk Banner; 96.53, average of ten highest entries from state; 95.86, Wisconsin next highest.
- 1911—Milwaukee, Wis., International Dairy Show, silver loving cup; highest average of twenty highest entries.
- 1912—Milwaukee, Wis., International Dairy Show, silver loving cup; highest average of 15 per cent of creameries of state.
- 1913—Chicago, Ill., N. C. B. A., \$100, Silk Banner; 96.248, average of ten highest entries from state; 95.68, Iowa, next highest.
- 1914—No contest held.
- 1915—Mason City, Iowa, N. C. B. A., \$100, Silk Banner. Score 95.55; Iowa next highest, 94.92.

It should further be explained that there have been in all only fifteen contests of a national or inter-national nature, and that the grand championship prize has come to Minnesota in thirteen of them. And, as a matter of fact, it was Minnesota-trained men who carried off the honors for another state on one of the two occasions when Minnesota lost.

The 1913 legislature provided that under certain conditions creameries might stamp their butter with the name "Minnesota." There are now twelve "state brand" creameries which have fulfilled the 13 rigid requirements for A-1 Grade, and the 11 requirements for B Grade.

The likelihood of our continuing to win the national grand championship prize increases with the number of creameries qualifying under the "state brand."

CHEESE FACTORIES AND CONDENSARIES

A cheese factory to be profitable requires only about one-fifth as many cows and one-fifth as much capital as a creamery, and for this reason cheese factories were built very largely during the earlier days of dairy development. For various reasons, however, chief among which was the cost of delivering the large quantities of sweet milk to the factory daily for cheese making, the majority of these plants have been converted into butter-making establishments, until there are now only seventy-two cheese factories in the state. These, however, are well established, doing good business and in every way demonstrating their right to be. The number is slowly increasing.

There had never been a condensed milk factory in the state until quite recently and there are but 4 at the present time. There are likewise two plants equipped for the making of dry milk or milk flour.

THE SPREAD OF DAIRYING AND ITS VALUE TO THE STATE

The northern portion of the state, once so heavily wooded and later thought to be of little value, is now developing most rapidly into prosperous agricultural communities, and this is very largely due to the use of the dairy

cow and the manufacture of her product in the co-operative creameries. The comparatively cheap land of the northern counties will produce nearly, if not quite as much profit when pastured to cows as will the farms of the southern counties valued at three to six times as much per acre.

The short-horn was the first distinctive breed of cattle to gain prominence in the state and there are still a larger number of grades of this breed than any other. The distinctive dairy breeds are, however, increasing more rapidly in number than are the beef breeds. The Holstein-Friesian, the Guernsey, the Jersey, and the Ayershire are increasing in number most rapidly in the order named, and with their increase in number a marked improvement is noticed in the average yield of the cows of the state, the present average being about 175 pounds of butter per cow per year.

The creamery butter and factory-made cheese in Minnesota amounts to more than \$38,000,000 per year, a sum nearly one-third greater than the total out-put of gold from Mexico under normal conditions, and nearly one-half as great as the total gold out-put of the United States including Alaska, while the total value of dairy products in Minnesota is about \$96,000,000.00 annually. The production of butter may be said to be a perpetual gold mine, since the ingredients of which butter is made are of the cheapest on the farm. The manufacture and sale of butter feeds humanity without impoverishing the farm from which it was derived and is in a true sense a creative industry and one worthy of even more encouragement than it has received in the past.

MINNESOTA

FRUIT GROWING IN MINNESOTA

By Le Roy Cady
University of Minnesota

THE varied soil and climatic conditions in Minnesota makes possible the growing of most of the small fruits, such as strawberries, raspberries, currants, gooseberries, blackberries and many varieties of apples and plums generally throughout the state. Cherries are grown to advantage only in the southeastern part of the state, and even here are not always a paying crop. Apples are grown in large quantities in the southern half of the state and may be grown in quantities for home use in almost any part of the state if the right sorts are selected.

Apples.—The principal fruit districts at present are the district about Lake Minnetonka and the southeast quarter of the state. These sections produce as nice Wealthy, Patten, and Northwestern Greening as can be raised in the United States. Apples seem to do best on rolling land, often land along the lakes and rivers that cannot be used to advantage for other crops. An open clay subsoil and a northeast slope gives the best apples.

Plums of native origin do well throughout the state generally. The Japanese and European sorts may be grown in favored places, such as along