The Use of Silage Fed Milk

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Since cheese makers and dairy farmers frequently differ in their views about the use of silage for Swiss cheese making, a meeting of this association where both groups of men are present affords the best opportunity for each to gain the others view point so that both may arrive at the correct solution of the problem.

Already in Wisconsin there are about 60,000 silos, or one silo for each three farms. Practically without exception the farmers who have used silage for feeding dairy cattle are so well pleased with the result that they are determined to continue its use.

Among the advantages of the silo to the dairy farmer are the following: First, the use of silage affords a nutritious and succulent feed for cows throughout the winter. This is especially helpful where winter dairying is practiced, in which case both higher prices are obtained for the milk, and also the yield of milk per cow is apt to be larger than in summer dairying.

Farmers who practice summer dairying find the silo a very great advantage in maintaining the milk flow without shrinkage during the hot summer months, July and August, when the pastures are dried up. The increased milk production in the summer is an advantage not only to farmers but also to cheese makers who thus receive a larger quantity of milk at the factories.

Quality of Dairy Products.

As soon as silos came into somewhat general use in Wisconsin a few years ago, the question as to the effect of silage on the quality of dairy products was raised immediately. There was general opposition to silage from manufacturers. Condenseries, creameries, and American cheese factories in many cases refused to accept silage
fed milk, but further experience proved that these fears were unfounded, and at the present time enormous quantities of milk are used for making butter and American cheese and at condenseries, and no one now thinks of opposing its use for these purposes.

More recently the question has arisen at Swiss cheese factories as to whether silage fed milk can profitably be used. It must be remembered that for making Swiss cheese the very best quality of milk is necessary and that American cheese can be made with good success out of milk that would not be satisfactory for Swiss cheese.

The Swiss cheese maker has behind him the record of many centuries of successful work during which time numerous questions have arisen and have created considerable discussion for a time and have finally been settled. At one time within memory of some of the members of this association there was a vigorous opposition to the application of commercial fertilizers to the fields where dairy cows were pastured based on the supposition that thereby the quality of the milk would be injured for making Swiss cheese. This idea has entirely disappeared and the use of fertilizers is now general and unquestioned.

It is equally possible that in a few years a similar solution may be found for the silage question and in view of this fact cheese makers should be open minded and make every effort to learn whether it is not possible to handle silage fed milk in a satisfactory way at factories. The importance of this question to the farmer and to the Swiss cheese factory is well shown by the statement in this convention last year by a farmer who stated that the silo had come to stay upon the Wisconsin dairy farm and if Swiss cheese factories were unable to use the milk then the producers would be compelled to look elsewhere for a market.

Many cheese makers hold the opinion that silage fed milk is likely to cause bloated cheese. Cases are on record where factories have had very great trouble and heavy losses due to bloating of cheese which was ascribed
to silage. The trouble begins a few days after the cheese has been taken out of the brine and develops slowly but without stopping until at the age of about two weeks or a little more the cheese are ready to crack open. Under these circumstances the only possible thing to do with such cheese is to put them in tubs and ship them as young as possible to a cold storage warehouse where they can be thoroughly chilled to stop the fermentation. While there can be no doubt as to the serious injury arising from bloated cheese, an important question remains as to whether this trouble is due to silage or not. The desirable end is, of course, to stop the trouble but to continue feeding silage, if this is possible.

A year ago this Association passed a resolution requesting the Wisconsin Agricultural Experiment Station to study this problem at the Dairy School and determine, if possible, whether silage fed milk can be successfully used in making Swiss cheese. In compliance with this request the studies have been carried on along two lines: first, by making cheese from silage milk at the dairy school in Madison, and second, by studying the causes of trouble which occurred at commercial factories and which was reported to the dairy school by mail. For the purpose of making cheese at Madison, milk was brought from a large dairy farm just outside of the city where silage and clover hay were fed daily to the cows. The work was begun in the early spring and continued until the cows were turned out on pasture. The 14 cheese exhibited here on the table represent 14 days' make from this line of experiments. As can be plainly seen these cheese show no sign whatever of bloating. They are somewhat open but are not as open as might be desired, due perhaps to their small size and the dryness of the curing room, although they were placed in a hot room at about 185 degrees Fahrenheit for some weeks in order to open them.

So far as these cheese show anything they prove conclusively that good cheese free from bloat can be made
from silage fed milk and they indicate that when trouble does occur it is due to something else besides silage. It should, therefore, be possible to locate and correct the source of trouble without interfering with the use of silage as a feed for the cows.

This line of cheesemaking will be continued during 1917, beginning about March 1. It is planned also this year to make cheese if possible during the hot dry weather in August when the pastures are dried up and silage is being fed. We hope to report the results obtained to you at some future time, probably next year.

In the second case the Experiment Station has studied conditions at a number of commercial Swiss cheese factories in Green and Lafayette counties. Factories were visited where it was used and a number of such factories were located where no trouble has arisen from the use of such milk but cheese of excellent quality was obtained entirely free from bloat. Other factories were visited where considerable trouble was experienced in getting good cheese, and in the worst factory found by us the trouble was so bad that about $3,000 had been lost during 1915 and 1916 from bloated cheese. The factory was about to be closed because of this trouble and loss when we first visited it. An examination of the milk delivered by the different patrons and by the use of the sediment test and curd test did not indicate that any one patrons's milk was especially bad. A meeting of the patrons was called at the factory and it was explained to them that efforts would be made immediately along several lines to correct this trouble, until the proper remedy was found.

The first method tried consisted in running a steam pipe from the boiler out to the whey tank and directing the cheese maker to heat the whey immediately after skimming each day to 155 degrees in the whey tank. This was first done on the 30th of June and beginning with the first day of July, that factory had not a single
defective cheese throughout the season, but every cheese produced was sold at the full market price and there was no more trouble from bloat. Much to our surprise we found that not one of the patrons at this factory had a silo and there could be no doubt that the trouble was caused by something else than silage.

While the results obtained this season at commercial factories were important and striking, yet before making a final statement as to the conclusion, it seems desirable to continue the work throughout another season and visit a large number of factories. For this purpose it is requested that cheese factories will write to the dairy school at Madison stating in a letter whether or not they are using silage fed milk and whether they are getting a good quality of cheese from it. Also any factories which are getting bloated cheese or cheese damaged by any other defects are requested to write to the dairy school in order that such factories may be visited promptly before the loss becomes excessive, and in order that some possible remedy may be applied to stop the trouble, if possible. It is especially important for us to learn of as many as possible of these two classes of factories; those which are using silage successfully and those which are having trouble with bloated cheese whether feeding silage or not. With the proper cooperation from the factory men, cheese makers, or patrons in writing to the dairy school about their factories, we hope to be able to present a larger amount of decisive information on this important problem at a later date.

A discussion of the paper by various members on the floor brought out some interesting facts. It is of course necessary that spoiled or decayed silage shall not be fed to dairy cows and there is always the possibility where a number of farmers have silos that one of their
number will feed spoiled silage or in some other way injure the quality of milk delivered at the factory so as to cause bloating and loss. As a rule it is considered best to feed silage to cows immediately after milking rather than before since there is thus less danger of infecting the milk directly with the silage or of communicating a flavor to the milk from silage fed to the cows.

It was stated that at one factory the cheese maker directed the patrons not to feed silage, assuring them if they did the quality of the milk would be injured, but one of the patrons stated that before these directions were received he had already been feeding silage for two weeks and without saying anything about it he continued to do so, and no trouble arose.

Mr. Gottlieb Marty described his experience in making Swiss cheese at a factory near Juda where at one time when the patrons began feeding silage the cheese began to bloat and a little later when the patrons stopped using silage the bloating disappeared. This convinced the cheese maker that silage was the cause of the trouble. However, in the following year at a neighboring factory where no silage at all was fed to the cows, the same trouble exactly appeared in the cheese and then disappeared after a short time, which convinced the maker that the trouble was due to some other cause than silage.

The reason why a running steam pipe corrected the trouble at the factory described in the paper appeared to be as follows: The milk of some one patron came to the factory in bad condition due to the presence of harmful germs or yeast. This yeast passed through the Swiss cheese kettle, some of it remaining in the cheese and causing the cheese to bloat and some of it reaching the whey tank where it grew enormously and affected all of the whey. The next morning the patrons carried the whey home in their cans thus infecting all of the cans with yeast, and if some of the cans were not well wash-
ed, the yeast infected the milk which was brought back to the factory. In this way the yeast growing in the whey tank caused trouble day after day. The steaming of the whey in the tank kills the yeast which has been accumulating there, and by continuing to steam the whey daily, any new trouble of this sort which comes in is stopped instantly. At other factories some other method of prevention might be necessary and there are other remedies that might be tried.

The exhibit of cheese made from silage fed milk attracted considerable attention and discussion from cheese makers who were present at the meeting throughout the session.