

COLLEGE BULLETIN No. 106. ISSUED MONTHLY. EXTENSION SERIES II, No. 11.

Entered as second-class matter November 27, 1909, at the postoffice at Corvallis,
Oregon, under the Act of July 16, 1894.

OREGON AGRICULTURAL COLLEGE
EXTENSION SERVICE

R. D. HETZEL, DIRECTOR.

FARM BUTTER MAKING

By O. G. SIMPSON.



1914.

The Bulletins of the Oregon Agricultural College are sent free to all residents
of Oregon who request them.

Department of Dairy Husbandry.

R. R. GRAVES, Professor.

O. G. SIMPSON, Instructor.

E. R. STOCKWELL, Instructor.

EDWARD B. FITTS, Extension.

W. A. BARR

S. J. DAMON

Co-operative Extension Work With

U. S. Dairy Division.

FARM BUTTER MAKING

The amount of farm butter on the market is growing less every year. This is due primarily to the development of the creamery industry, which has made it easier for the farmer to dispose of his product in the form of cream. It is due, also, to the fact that creamery butter is of greater uniformity of quality than farm butter, which has caused it to be more in demand than the farm product.

For the farmer who can supply a local market, where he can keep in direct touch with his customer, there is still a good demand at fair prices for farm butter of good quality. If care is taken with the milk and cream and a little intelligence applied to the making, the farmer is in a position to make butter of the very highest quality.

The process of butter making really begins with the production of the milk. More depends on the care given the milk and cream before entering the churn than on the butter-making process proper. Good butter cannot be made from poor cream, no matter how skilled the maker may be in the art of butter making.

The Cream. A fairly rich cream gives best results for butter making. A cream that will test from 30 to 35% or produce about 3½ pounds of butter per 10 pounds of cream, is of about the desired richness. Other conditions being equal, a rich cream will have a better keeping quality, and will churn easier than a thin cream.

If the cream is to be kept any length of time before ripening, it should be cooled down below 50 degrees F. immediately after skimming. Tin containers are preferable to crocks or other material. Tin allows the temperature to change more easily and is more easily cleaned. If two lots of cream are to be mixed, they should both be cooled to the same temperature.

Ripening the Cream. This means developing the proper acidity (sourness) before churning. Fresh cream should not be added for 12 hours before churning, because the fat in this cream will not have had time to assume the same condition as the other fat, and will not churn out as thoroughly.

There are two common methods of cream ripening in use among farmers:

1. Ripening during the entire time between churnings.
2. Cooling the cream immediately after separating and ripening for a period of from 12 to 24 hours.

In the hands of a judicious person, good results may be obtained with either method. When churning is done every other day, the first method may be most desirable, while, if done once or twice a week, the second method gives better results.

Much more uniform results are obtained in ripening cream by

the use of a starter. A home-made starter may be made by selecting milk from a cow that has been fresh within two or three months. Run this milk through the separator first, and put the resulting skim milk into thoroughly scalded fruit jars or milk bottles. Keep the milk at a temperature of 90 degrees and hold as near this temperature as possible, till the milk commences to coagulate. When coagulated, the starter should have a pleasant acid flavor and aroma free from undesirable taints.

Starter should be added at the rate of 10 to 15 per cent. 12 hours before churning.

The ripening temperature should be between 62 and 72 degrees. Usually, the higher temperature is used in winter and the lower temperature in summer.

When the cream is ready to churn, it should be thick enough to adhere in a thick coat to a paddle or spoon, have a smooth velvety appearance, and a pleasant acid flavor and aroma.

The proper temperature of the cream for churning depends upon:

1. The richness of the cream.
2. The length of time the cows have been in milk.
3. The breed of cows.
4. The feed.

It is not possible, therefore, to give a definite temperature for churning. It is well to know, however, that the following conditions usually require low churning temperatures (54 to 62 degrees):

1. Very rich cream.
2. Cream from the milk of fresh cows.
3. Cream from the milk of cows receiving succulent feed, such as fresh pasture, roots, and ensilage.
4. Cream from the milk of Jersey or Guernsey cows can usually be churned at a lower temperature than that from other breeds.

Conditions that usually require high churning temperatures (64 to 75 degrees):

1. Very thin cream.
2. Cream from cows a long time in milk.
3. Cream from the milk of cows receiving dry feed, such as hay, straw, dry pasture, or cotton seed meal.

It cannot be definitely stated how high it may be necessary to raise the temperature of the cream to make butter under any of the above conditions, and the best rule that can be given is to raise the temperature high enough to bring the butter in small granules in from 30 to 35 minutes.

Too high a churning temperature is not desirable, as it causes the butter to come in soft lumps instead of in flaky granular form, causes a greasy texture in the butter, and also causes the incorporation of too much buttermilk, which will spoil the flavor of the butter.

Too low a churning temperature is also undesirable, although it is better to have the temperature a little low rather than too high. Cream at too low a temperature is difficult to churn. When the butter does come, it will be in such a firm condition that it will not gather properly and is apt to make a dry, brittle butter that does not spread easily.

All of the cream should be passed through a finely perforated tin strainer as it is being put into the churn, in order to remove curd or foreign material.

Amount of Cream in the Churn. Churning will be completed in the shortest time, when the churn is about one-third full. If a small amount of cream is being churned, it is difficult to gather the butter properly and it is apt to be over-churned. If the churn is more than half full, there is not room enough for the cream to drop and create the necessary concussion for rapid churning.

Too rich cream is likely to stick to the sides of the churn. This may take place to such an extent that no concussion is obtained. When this occurs, the addition of a small amount of water of the same temperature as the cream will cause agitation to commence again.

In case the cream froths, the addition of a little salt will cause the butter to come. Ripening the cream to a higher degree of acidity will help overcome this objection.

Coloring. When coloring is used, it should be added to the cream just before churning is commenced. Coloring does not improve the quality of the butter, but, in the late fall and winter months, a little coloring improves the appearance. The butter makers must be guided in using color by the market requirements. Too deep a shade is repulsive.

Speed of the Churn. The proper speed for the churn depends upon its size and the condition of the cream. That speed which gives the greatest concussion will be the most effective.

Adding Water to the Cream in the Churn. If the cream has been properly prepared and is at the right temperature, the churning may be finished without adding any water. If, for any reason, the butter is coming too fast, it is advisable to add, just when the cream is breaking, a little water, about two degrees colder than the cream, with a little salt in it. This will assist in separating the butter from the butter-milk. Two common causes for cream churning too slowly, are, (1), too much cream in the churn, and, (2), the temperature of the cream is too low.

When to Stop the Churn. This is an important point and it has a great deal to do with the quality of the butter. The churn should be stopped when the granules are about the size of wheat or split peas. When the butter is churned to too small granules, many of them will go through the strainer into the butter-milk and cause a considerable

loss. Over-churning should be avoided as much as under-churning. Over-churning butter will cause it to retain a large amount of butter-milk, which will be difficult to remove in washing.

The butter-milk should be drawn off as soon as churning is completed, as conditions are then best for its rapid and complete removal. Strain the butter-milk so as not to lose any fine particles of butter.

Washing the Butter. The butter should be washed as soon as churning is finished, only pure clean water being used. In very warm weather, have the water about two degrees colder than the butter-milk, and in cold weather from two to three degrees warmer; run in slightly more water than there was cream; revolve the churn quickly about half a dozen times, and draw the water off; then wash a second time, using a little less water than there was cream, and revolve the churn as in churning until the granules are about the size of large peas, and draw off the water at once.



Figure 1—GRANULAR CONDITION OF BUTTER DESIRED AT SALTING.

Salting the Butter. If the amount of butter in the churn can be fairly well estimated, the salt may be added to the butter while in the churn. Add the salt as soon as the washing water is drained off, sifting half of the salt evenly over the butter; then turn the butter over with a wooden ladle or by turning the churn partly over, and sift on the balance of the salt; put on the cover of the churn and revolve it slowly until the butter is gathered into a solid mass, and allow it to lie in the churn 10 or 20 minutes before working it. If the salting is done on the worker, the butter can be weighed and the salting done accurately. Take the butter out of the churn while in the granular form, and, after weighing it, spread it evenly over the worker and sift all of the salt on before working is commenced. Endeavor to have the salt well mixed with the butter while it is still in the granular form. The amount of salt should vary according to the taste of the consumer. Usually, one ounce of salt to one pound of butter is added.

Mottles. Mottles are usually caused by churning the butter into too large granules or lumps, which retain butter-milk. Mottles are not to be confused with wavy butter, which is caused by the uneven distribution of salt.

Working the Butter. For farm butter making, a lever butter worker is preferable to a butter bowl for working the butter. In working the butter, a sliding or scraping motion should be avoided. The lever or paddle should be pressed downward, double the butter over with a ladle, or by inserting the lever under the butter at one side of the worker, roll it over and work as before. When sufficiently worked, it should present a smooth solid appearance when cut with a sharp ladle; and when it is pressed between the worker and the ladle, the moisture should show in small beads evenly distributed over the cut surface. Butter, that has been salted in the churn, will not require as much working as that salted on the worker. Only fine dairy salt should be used and it should be kept in a clean place, as salt will absorb odors and thus injure the flavor of the butter.

Package. The package should be molded into neat one and two-pound prints. There are a number of different kinds of molds on the market, of which the hinged type is the most common. There are also molds in which the butter is packed from the churn and allowed to harden before being cut into squares. When only eight or ten pounds are made at a time, the hinged or other type of mold, which prints up the butter as soon as the working is complete, is most satisfactory. When ten pounds or more are made at a time, it is better to use a type which allows the butter to harden, as it is much easier to handle a large amount of butter when hard.

The parchment paper used for wrapping the butter should be of 25 or 30-pound stock. The Oregon law requires that the wrapper must bear the name and address of the maker and the words, "16 ounces, full weight," or, "32 ounces, full weight."

If the maker wishes to cater to the very best trade, he should put the butter into attractively printed and paraffined cartons.

UTENSILS AND THEIR CARE.

The Churn. Churns with internal working parts are to be avoided. The best results are obtained by churns that agitate the cream by letting one part of the cream fall against another part. The barrel churn is the most convenient and easiest to keep sweet and clean. Before using, it should be well scalded with boiling water and then cooled by revolving a few minutes with cold water in it. After churning, put a pailful of luke warm water in the churn and revolve it, to wash out any butter that may be in it; then thoroughly scald it with boiling water and leave it open in a clean, dry place. It is advisable to wash the churn occasionally with hot lime water to keep it sweet.

The Butter Worker. The V shaped lever butter worker is convenient for farm dairy work. In preparing the worker for use, it should be well scrubbed with a brush and scalding water and then thoroughly cooled by pouring on cold water. The butter printer and ladle should be washed in the same way and then put into cold water for some time before using. Sometimes, the butter will stick to the worker and printer. This indicates that the wood has not been completely filled with hot water before cooling. A thorough brushing with hot water with a little salt added, before cooling, will remedy this trouble. There are a number of patented butter workers on the market, most of which have merit and are usually well worth the investment.

Thermometers. It will be noticed that all through the process of making butter, proper temperatures are essential to get the best results. It is absolutely necessary, therefore, that the successful butter maker should have a correct dairy thermometer. One that is correct cannot always be procured from the ordinary stores, but it can be procured from any of the leading dairy supply houses.