

LIVESTOCK AND DAIRY

Facts About Care of Farmers' Feeders and Aids to Greater Milk Production.

+++++
 + We are all interested in +
 + good butter. The consumer is +
 + interested because he is al- +
 + ways willing to pay the best +
 + price for the best butter; the +
 + farmer because he wants to +
 + obtain the best price possible. +
 + Under these circumstances +
 + Northwest farmers will find it +
 + worth while to consider the +
 + following article on butter +
 + making on the farm. The +
 + writer is a recognized expert. +
 +++++

By A. B. NYSTROM
 Dairy Husbandman, State Agricultural Experiment Station, Pullman.

THERE is perhaps no one on the farm today who does not believe that butter made in the old-fashioned way is the best that can be obtained. This is true when the proper methods are employed, but an examination of the average stock of ranch butter for sale in the country store today will convince anyone that there certainly is room for improvement in the article that is sold for "first class country butter."

Good butter is a delicacy sought by nearly every consumer.

What constitutes good butter? An average of a number of analyses of butter gives the following composition: Fat, 85 per cent; water, 12 per cent; salt, 2 per cent; and curd, etc., 1 per cent. But the fact that these constituents are present in the proportions mentioned does not insure perfect butter. There is something more, something that can not be detected by chemical analysis, namely, flavor. Flavor can be controlled, but in many cases is not controlled, and as a result poor butter is produced.

Butter is judged commercially on a scale of points as follows: Flavor, 45; body, (texture) 25; color, 15; salt, 10; and package, 5. In most of the eastern critical markets, butter is very carefully scored and sold on its merits, and it is only by such means that the standard of quality can be raised.

On a farm where only enough butter for home use is made the quality is generally fair to good, because the butter is usually consumed before it has a chance to show signs of abnormal fermentation. It is on this account that the methods employed on the farm are as a rule not up to standard, and because of this also a large supply of very poor ranch butter finds its way to the markets in the flush of the season.

Creameries must necessarily make a product that will keep well for a comparatively long period and consequently the most scientific methods are employed. Now if these good methods are applied on the farm, a product may be made that cannot possibly be surpassed by the creamery. Poor butter means undesirable fermentation has taken place at some stage in the production, and where all possibility of fermentation is under the control of one man as it would be on the farm, first class butter can be

produced. A creamery must make a good product out of the cream which is received. A dairyman needs only to be a little careful in producing the milk in order to have the best cream from which to make his butter.

Cream Perishable Product
 Cream is a perishable product, germs develop in it as they do in milk, although not as rapidly. The first fermentation which takes place is the lactic, where the germs act on the sugar in the milk, changing it into lactic acid, and it becomes "sour." If the sugar is not present there is little chance for the germs to grow, and since the fat is the last substance that is worked on it follows that the richer the cream, the longer it will keep sweet. This is one reason for not wanting thin cream. Another is that under most conditions it is easier to churn a cream of from 30 to 50 per cent fat, and a better grade of butter can be made.

If perfectly sweet butter is desired, it would, of course, be necessary to churn at least three times a week. However, this is not necessary in order to get good butter, for most of the good butter that is on the market today is made from cream that is stored from four days to nearly a week. It is in the storing of cream that most of the bad flavors in butter are produced. The undesirable germs may have gained entrance at some other time, but if the proper precautions are taken in storing, the fermentation can be checked, while if no care is taken, absolutely rancid butter is apt to be produced. As cream will absorb odors easily, it is imperative that it should not be stored with vegetables or victuals that are odorous. A clean, cool place should be used for storing cream.

The abnormal fermentations that are sometimes attributed to the cow are bitter milk, ropy milk and colored milk. These are all caused by germs that gain entrance through various sources but can be checked by proper methods of cooling and storing.

Sour Cream Easier
 While the butter made from sweet cream is relished by some, the majority of butter eaters want a quick flavor that is brought about by the ripening process. Sour cream is easier to churn, and there is less loss of fat than from sweet cream. To prepare cream for churning, proceed as follows: Mix all the cream into one vessel the day before you wish to churn, and let it stand at a temperature of from 65 degrees F. to 70 degrees F. for from four to eight hours. The sweeter the cream and the cooler the temperature the longer it will need to stand before cooling. This is called the ripening process. While good butter can be made from sweet cream, it lacks the aroma characteristic of sour cream butter and practically all the commercial butter is made from sour cream.

The ripening, or souring, is done by bacteria which feed on the sugar in the milk or cream and break it down into lactic acid. The more of these germs there are present and the more favorable the temperature is, the quicker the cream will sour. The presence of lactic acid causes the sour taste, and also makes the cream thick, i. e. it curdles the casein.

All germs, good or bad, grow well at the blood heat (98 degrees F.) very few germs grow well at 50 degrees F. while at 65 to 70 degrees F. the lactic acid (souring) germ grows very well and the undesirable ones do not grow so well. By having the cream at the latter temperature, it gives the desirable germ a chance to gain control and crowd the others out. Very frequently in winter time milk will turn bitter before it will sour. The reason for this is that the germ which causes bitter milk will grow well at low temperature, while the souring germ will not grow at all. If the same milk had been heated to 75 degrees F. soon after it was milked, it probably would have had a clean acid flavor.

Natural Starters
 In the ripening of cream it is necessary to help the souring germ to get control if we are to expect the best butter. This can generally be done by allowing the cream to stand at the temperature which is favorable to the growth of these germs (65 to 70 degrees F.). However, if a large supply of undesirable germs are present it may not suffice to insure good flavor. The next resort then is to use a starter. A starter is a mass of the desirable souring germs in active form, growing generally in some milk medium and may be made as is shown be-

low. The natural starters are the ones most commonly used on the farm. They are made by selecting some pure milk produced under sanitary conditions and divided into a number of sterile bottles. These are set away, at a temperature of 70 degrees F. to encourage the growth of the lactic acid germ, until the milk thickens. As soon as the milk thickens it is ready for use, for at that time the germs are the most active, and the flavor is the best. The bottles are all examined and the best one is used as a mother starter. When a quantity is needed for putting into cream a small amount of the mother starter is used to inoculate a large canful of scalded and cooled skim milk, and this is added to the cream before the ripening process begins. Various mediums such as butter-milk, whey, whole milk and skim milk are used as starters, but the latter is much preferred, because the absence of fat seems to aid in the rapid development of the lactic acid germ. Skim milk for a starter should be heated to 170 degrees to 180 degrees F. for about 20 minutes, then cooled to 70 degrees F. and a small amount of the mother starter added. As soon as it is thick it is ready for use. If the right germs are present it should have a mild acid taste, and leave no disagreeable after-taste.

The amount of starter to be added to the cream will depend upon the temperature of the starter and cream, and upon the length of time the ripening is to continue. Usually about 20 per cent of the bulk of the cream is best.

If a pure culture can be obtained, the directions found on the package should be followed in making the mother starter and after that it works the same as a natural starter.

The advantages of using a starter are: First, it makes it possible to get sour cream which can be churned easier than sweet cream; second, it makes a better flavored butter than can be made from sweet cream, or from cream that has had a good starter, provided, of course, that the starter is good; and third, it makes a more uniform product.

Preparing Cream for Churning
 It is difficult to lay down hard and fast rules for churning because there are so many factors that will change conditions. The principal points to be observed will be cited. As soon as the cream is ripe, which can be determined by the glossy appearance when stirred, or when the acidity has reached about 0.5 per cent, it should be cooled to churning temperature and kept at least four hours before churning. It is customary to ripen one day and cool down in the evening for churning the next morning. The cooling temperature varies with the conditions and should be from 50 degrees in the summer to 60 degrees in the winter.

Do not over-load the churn. The more agitation there is the sooner the butter will come. Have the churn half full or less. If the color is to be used it should be added before the churn starts. The agitation should be continuous and uniform, and if all conditions as to acidity and temperature are right, the butter should "come" in from 30 to 40 minutes.

When to Stop Churning
 It is the one thing that causes the most defects in ranch butter. There is a common idea that butter should be churned into lumps as large as possible, and then worked well to exclude the buttermilk. This is an error. The buttermilk carries with it numerous germs that aid in the spoiling of butter, and it is impossible to entirely work these out. If the attempt is made, the texture of the butter will be injured and it becomes soft and smeary like salve, rather than like wax. The buttermilk should be washed out with pure cold water, and in order that the water shall do the most good, the churning should be stopped when the butter is in granules about the size of wheat. This will also aid in the even distribution of salt. If the granules are round and regular and the buttermilk has drained off well, one washing will suffice, but ordinarily it will be necessary to wash twice. The temperature of the wash water should vary according to the consistency of the butter, but a good rule to follow is to wash the first time washings as cold as at the churning and the second time four degrees above churning. If the butter is very soft it may be necessary to have both washings as cold as at the churning temperature. Too much washing

spoils the flavor in a measure. Only a small amount of agitation is necessary for the washing as the butter should be kept in the granular form as much as possible so that the salt can be worked in to better advantage. If the lumps are large it takes more working to get an even distribution of the salt.

Salt will take up odors readily, and it is essential to store the salt in a clean place, especially free from odors. There are two ways of salting butter; namely, by adding dry salt directly on the granules, or by dissolving the salt water and adding the brine. The latter method takes more salt but has the advantage of leaving no grittiness in the butter. Grittiness is due to small crystals of salt in the butter, which is commonly supposed to indicate an excess of salt, but when butter contains only a small amount of water grittiness may occur when only a small amount of salt is present.

Working the Butter
 Butter is worked mainly to distribute the salt, and when the salt is evenly distributed it is time to stop working. Unfortunately, however, one must rely upon the taste and upon the disappearance of holes in the butter to indicate this, and it therefore takes a good deal of practice to become proficient in the art. It is necessary to keep the butter cool while working so as to prevent spoiling the texture which will result from working soft butter. Two or three workings are needed with intervals of five or ten minutes between them. Longer intervals than this will not injure the butter so long as the correct temperature can be maintained. This will allow the salt to dissolve before the final working, and there is less chance of having mottles on the finished product.

The packing should be done while the butter is in a workable condition, as the moulding into prints can then be done easily and perfectly. If the butter is to go on the market it is well to have an attractive and neat package, with the mark of the dairy from which it came placed conspicuously on the outside. A prospective buyer judges the methods used in manufacture largely by the neatness of the package, hence it is certainly unwise to put good butter into a poor package.

The best policy to follow in marketing butter is to sell nothing that is not first class. Then the label will soon be recognized as standing for the best, and the greatest difficulty will be in filling orders rather than in finding a market.

Summary
 The best butter can be made on the farm, where the control of all conditions is under one man, and he can understand butter making.

The poorest butter can be made from good cream if the buttermaker does not understand the underlying principles of the art.

The causes of foaming are: Sweet cream, churn too full, and insufficient agitation.

Hard churning may be caused by foaming, thin cream or cream too cold, cream from cows advanced in lactation, and when cows are fed only dry feeds.

Cream should always be strained into the churn so that there will not be white curd particles in the butter.

Stop churning when the granules are about the size of wheat.

Wash out the buttermilk instead of trying to work it out.

Mottles are caused by an uneven distribution of salt or the presence of curd. They can be prevented by washing out the buttermilk thoroughly and working the salt in better.

Adding butter color does not have any effect upon the mottles.

Work the butter only enough to distribute the salt evenly.

Do not touch the butter with the hands. Use wooden paddles.

Keep churn and butter utensils perfectly clean, using hot water with some good washing powder.

Pack butter in neat packages and keep up the standard of quality.

Boys and the Corn Crop
 For 10 years the average for corn growth in Ohio has been 35 or 36 bushels to the acre. Last season more than 1,000 boy farmers—members of the state corn clubs—averaged greater than 85 bushels an acre on all kinds and types of soil.

Make Your Boy Happy



Let him play in overalls with never a care in the world and you will make him a healthy, happy boy. Be sure to buy him

Two-Horse Brand Overalls

The kind that is made for comfort and long wear.

A New Pair **FREE** If They Rip



Made By
LEVI STRAUSS & CO., San Francisco

HIDES

FURS, WOOL, PELTS, ETC.
 HINBARD-STEWART CO.,
 Seattle, Wash.

Write for price list and shipping tags.
 (Please mention this paper.)