

# PRACTICAL HOME DAIRYING

Circular 431



EXTENSION SERVICE, OKLAHOMA A. AND M. COLLEGE

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# Practical Home Dairying For Farm Women and 4-H Club Girls

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## INTRODUCTION

In recent years the real value of dairy products as foods was brought to light from the results of nutritional research and through the dissemination of this information to the people. Oklahoma is fast becoming one of the important dairy states in our nation and the increase in dairy production has been especially rapid during the past two decades. With the realization of the importance of dairy products as a food there is every reason to believe that dairying in Oklahoma is a permanent institution. Not only is dairying important to our farmers from the standpoint of the food that it furnishes, but also from the profits that it returns to the efficient dairy farmer. Too many of our dairy farmers are inclined to have low production in their herds by inefficient feeding, breeding, and management methods and too many of these same farmers fail to appreciate the healthfulness and economy of using large amounts of dairy products as food for their families.

Although Oklahoma ranks as one of the leading dairy states from the standpoint of the amount of milk produced annually, we are constantly faced with the problem of low quality products which is largely the result of improper care of milk, cream, and other dairy products on the farm. It seems logical to assume that in the future we can expect severe competition from the dairy products produced in other states, particularly the northern states, and it is a well known fact that the Federal Food and Drug Administration intends to eliminate, as fast as possible, those dairy products which they consider unfit for human consumption. The production of high quality dairy products will pay dividends not only because people will consume more high quality products but also because dairy products are largely priced on the basis of grade. Since the quality of milk and cream produced on the farm determines to a large extent the salability of the product and its value in dollars and cents, it behooves the Oklahoma dairy farmer to produce the best milk and cream possible.

It is the intention of the writers to present in this bulletin the essentials for the production of high quality milk and cream, as well as to give suggestions for the manufacture and use of various dairy products on the farm. The methods suggested do not require a big investment for special equipment but merely involve the efficient use of common equipment that is readily available and inexpensive.

### ESSENTIALS FOR QUALITY MILK AND CREAM PRODUCTION

The following discussion on the essentials for the production of high quality milk and cream intended to be used primarily for the ordinary farm and not for producers operating under a milk ordinance. Those who are producing milk for retail sale in a town or city generally operate under a local ordinance the requirements for which are enforced by the local milk inspector. The essential factors for the production of clean milk are:

1. Clean and Healthy Cows
2. Clean and Healthy Milkers
3. Clean and Sterile Utensils
4. Prompt and Efficient Cooling
5. Prompt Delivery

In addition to these five essential factors, there are five more that require special attention in the production of high quality dairy products. They are:

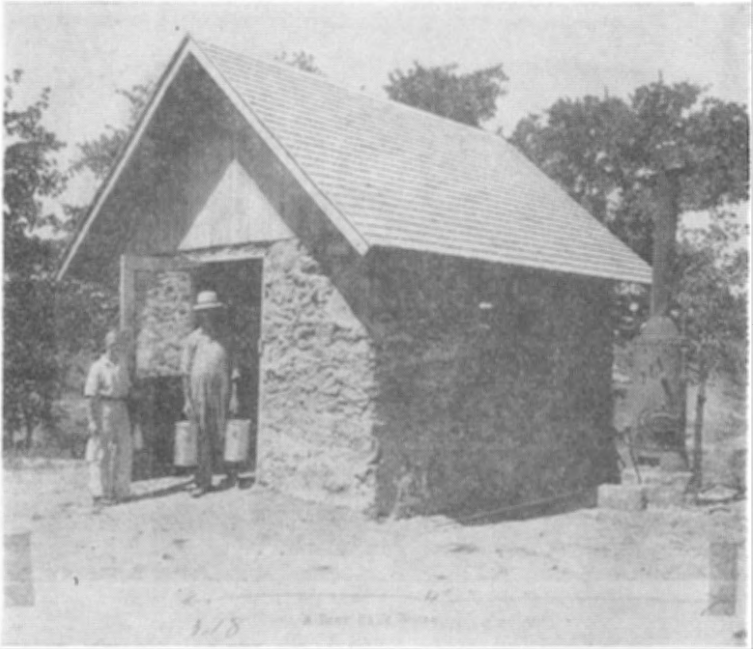
6. Elimination of Feed and Weed Flavors
7. Special Care of Milking Machines
8. Careful Cleaning of the Farm Separator
9. Efficient Straining of Milk
10. Proper Storage of Dairy Products on the Farm

There are several other factors which concern the production of high quality milk and cream, such as, contamination from dust in the air, from flies and from other miscellaneous sources, but these are relatively unimportant compared to the ones enumerated above and each case probably requires a special solution. The essential factors enumerated above will be discussed separately although these are not placed in the order of their relative importance from the standpoint of their influence on the quality of the milk and cream.



### 1. CLEAN AND HEALTHY COWS

Healthy cows are important because certain diseases, such as undulant fever and tuberculosis, as well as a number of other diseases can be transmitted through the milk. The cows should be tested regularly for tuberculosis and for Bang's disease and the reactors eliminated from the herd. It is highly important that the cows be clean before milking, since most of the contamination coming from the animal is a result of the animal becoming soiled with manure or mud. It is obvious that the barn should be cleaned daily, the barn lot should be well drained and kept clean and mud holes should be eliminated from the pasture. Before milking the cows should be curried and brushed to remove the coarse material hanging from the udders and flanks and the udders and flanks should then be thoroughly washed. It is recommended that the udders be washed with a cloth dipped in a warm chlorine solution (150 parts per million available chlorine). Clipping the long hair from the udders and flanks aids materials in keeping the cows clean. Adequate amounts of bedding material for the cows and proper construction of the stalls or stanchions are very helpful in keeping the cows clean. The use of a small top milk pail helps to eliminate much of the material which might fall into the milk from the udders and flanks.



## 2. CLEAN AND HEALTHY MILKERS

Although the number of organisms added to the milk from the hands and clothing of the milker may not be excessive, it is true that a few organisms coming from an infected throat of a milker are much more important to the health of the people who consume the milk than would be large numbers from some other source such as the dust in the air. The milkers should be healthy and those who have colds, sore throats or other illness certainly should not milk the cows or be allowed to handle the milk. The milker should wear clean clothing and by all means should wash and dry his hands just before milking. It is also important that dry hand milking, only, be permitted.

## 3. CLEAN AND STERILE UTENSILS

The utensils are generally the most important source of contamination of milk and cream on an ordinary farm. This is probably true because too many people fail to realize that, while they may look clean, unless the utensils are properly

sterilized, they may harbor millions of bacteria which will contaminate the milk coming in contact with them. A simple and easy procedure for washing utensils is as follows:

- (1) Rinse the utensils with cold water. This rinsing should extend to the outside of the milk pails to remove any dirt or other contaminating material.
- (2) Wash the utensils in a solution of warm water and washing powder. Soap is not satisfactory because it leaves a greasy film on the surface of the utensils which may protect the dirt and bacteria. Satisfactory washing powders can usually be obtained from a local dairy store or dairy plant. A stiff brush should be used on the utensils, both inside and out, to remove the film of grease and milk proteins which may harbor bacteria.
- (3) Rinse the utensils to remove the excess cleaning solution.
- (4) Sterilize thoroughly. Sterilization may be accomplished either by heat or by chemicals. Heat, which is commonly used in the form of steam or hot water, should be applied long enough and in great enough quantities to heat the utensils to a point where they cannot be handled with the bare hands. A little scalding water will just warm the utensils and not kill the bacteria. A large amount of boiling water, on the other hand, will not only warm the utensils but will heat them to a point where the bacteria are killed and this generous application of heat has the further beneficial effect of promoting rapid drying of the utensils. Chemical sterilization is usually accomplished by using chlorine solutions. The utensils should be immersed for several minutes in a solution containing about 150 parts per million available chlorine. With chlorine sterilization it is especially important that the utensils be completely free from milk solids because they destroy the activity of the chlorine and render it ineffective. Chlorine powder can usually be obtained from local dairy plants or dairy stores and it is advisable to follow the directions given on the container in which it is purchased. After thoroughly cleaning and sterilizing, the utensils should be allowed to dry and should then be stored where they will be protected from contamination by dust, flies, rodents, etc. The utensils should never be dried with a dishcloth or rag after

sterilization, but if they are drained completely and free circulation of air is provided they will dry rather quickly. Cans should not have the covers replaced on them before they are completely dry because the water which condenses inside a freshly steamed or scalded can will provide a good medium for the growth of bacteria. Bacteria will not grow on clean and dry utensils. A good place to store the utensils is on a rack inside a milkhouse that is screened from flies and protected from rodents.

#### 4. PROMPT AND EFFICIENT COOLING

It has been found through research that contamination of milk by bacteria from all sources on an ordinary farm seldom exceeds 500,000 standard plate count. On the other hand, with milk which has not been cooled, even though it was of good quality and free from excessive contamination when freshly drawn, the count may run into the millions within twelve hours due to growth of bacteria. Bacteria are microscopic plants and, like other plants, they demand moisture, food and proper temperature for growth. It is a well known fact that ordinary seeds will not germinate until the soil temperature becomes warm enough for their growth or if the temperature remains relatively cool and growth of the plants will be very slow. Bacteria act in much the same manner. If the temperature is very low they may fail to grow or may grow very slowly. It is recommended that milk and cream be cooled quickly to a temperature of 50° F. or lower if possible. The temperature of the water from wells in Oklahoma is generally 60° to 65° F. which does not permit cooling to the temperature suggested and therefore the use of ice or mechanical refrigeration is necessary if the milk is to be cooled to 50° F. or lower. Although the well water in Oklahoma does not cool to as low a temperature as we desire, cooling with water to as low a temperature as possible slows up the growth of microorganisms and helps to maintain the quality of milk and cream. On an ordinary farm a satisfactory method of cooling milk or cream is to provide a special cooling tank made from a small stock tank or from a barrel as shown in the accompanying illustration. The tank or barrel should be of such a size that the cans reach the bottom. The intake pipe should be so arranged that the cold water from the pump enters the bottom of the tank and the water which overflows into the stock tank flows out the top. It is best to provide a large can for holding the cream accumulated from each separation and a smaller can of the shotgun type for cooling the fresh cream. Fresh, un-



cooled cream should never be added to the cold cream from previous separations because this tends to warm the older cream and promotes rapid development of bacteria. The cooling is greatly facilitated by stirring at intervals during the first few hours. Since the water flowing through the tank flows into the stock tank, the routine on the farm should be so arranged that fresh water is pumped through the tank at the start of cooling process and this fresh water should be renewed and the milk or cream stirred at intervals for the first few hours. On farms where there are only a few cows and a mechanical refrigerator is available it may be convenient to place the milk or cream in suitable containers and allow it to cool inside the refrigerator.

#### 5. PROMPT DELIVERY

Cream and milk deteriorate rather rapidly, especially if there is considerable contamination and if the temperature at which they are held is relatively high. It is therefore important that the cream be delivered to the dairy plant or be used for making products on the farm while it is still fresh and shows no deterioration. Again it may be mentioned that bacteria are plants and the longer they are allowed to grow the greater damage they will cause. Many people have the mistaken idea that sour cream will test more than sweet cream because it is thicker. This idea has been proven to be entirely wrong and, in fact, sour cream may test lower than sweet cream because with uncooled cream the fat tends to rise to the surface, which sometimes results in a rather firm layer of coagulated cream accumulating at the surface. When this layer is broken up prior to sampling at the dairy plant or cream station, it is likely to remain in large chunks which are very high in fat but which are sometimes not incorporated thoroughly enough to be included in the test bottle. This cream then would give a lower test than it would have if it had been cooled properly and marketed before it became excessively sour.

#### 6. ELIMINATION OF FEED AND WEED FLAVORS

Since feed and weed flavors often occur in milk and cream produced in Oklahoma, their elimination is an important factor in improving the quality of our dairy products. When a cow consumes feeds or weeds that have strong flavors and odors, the characteristic flavors and odors of these feeds or weeds are transmitted to the milk. The characteristic flavors of strongly flavored feeds such as silage, alfalfa, sweet clover, etc., and of weeds, such as wild onion, bitter weed and ragweed, will likely be present in the milk if these materials are con-

sumed a few hours before milking. The common feed flavors can be largely eliminated by feeding strong flavored feeds just after the milking process rather than before milking. Weed flavors are effectively eliminated by providing the cows with temporary pastures, such as oat or wheat pastures, during the period when the weed flavors are likely to be prevalent. In many instances the weeds in a pasture can be effectively controlled by proper pasture management. If it is necessary for the cow to graze on a weedy pasture, the weed flavors in the milk can be reduced or eliminated entirely by removing the cows from the pasture three or four hours before milking.

#### 7. SPECIAL CARE OF MILKING MACHINES

Even though a milking machine may be a boon to the producer from the standpoint of labor, it may be a detriment from the standpoint of the quality of the milk and cream if it is not properly cleaned and sterilized after each milking. Milking machines are rather complicated and as a result an unclean milking machine can be the greatest source of contamination of the milk. The proper cleaning of milking machines involves the following procedure:

1. Immediately after milking—
  - a. Draw at least one-half pailful of clean, cold water through each unit.
  - b. Follow with one and one-half gallons of hot water rinse of not less than 165° F.
  - c. Remove the teat cups and milk tubes from the unit and place on a solution rack. Fill the teat cups and milk tubes with a 0.5 percent lye solution.\*
  - d. Dismantle the head of the machine and place the vacuum check valve in a 0.5 percent lye solution.
  - e. With a brush, wash the pail and the head of machine. Drain and place on rack so that these metal parts can dry rapidly.
2. Just before milking—
  - a. Drain the lye solution from the teat cups and milk tubes.
  - b. Assemble the machine.
  - c. Draw through each unit two gallons of a chlorine solution containing 200 parts per million of available chlorine. Slush the chlorine solution around in the pail and drain thoroughly.

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\* Since aluminum is easily corroded by alkalies, the lye solution should not be used if it will come in contact with any part of a milking machine made of aluminum.

3. At weekly intervals dismantle the machine and examine for cleanliness.

If for any reason the above procedure is not followed after each milking, the milking machine should be taken apart. The rubber parts are then immersed in a boiling one to two percent lye solution for at least thirty minutes and the metal parts, after thorough scouring, are sterilized by heating to a temperature of 180° F. or more, with steam or hot water.

#### 8. CAREFUL CLEANING OF THE FARM SEPARATOR

Separation of milk on the farm is usually accomplished either by gravity creaming or mechanical separation. Many producers in Oklahoma still use gravity creaming whereby the milk is set in pans, the cream allowed to rise and then skimmed off with a large spoon or ladle. Other producers continue to use water separators which involve the mixing of milk with water, allowing the cream to rise, then drawing off the skim milk through a valve in the bottom of the separator. With either of these methods of gravity separation, a considerable amount of fat is lost in the skim milk and the quality of the cream is generally very inferior to that obtained with a mechanical separator. A mechanical separator will usually pay for itself in a short time through savings in butterfat, labor and quality of the product, even though the producer may have only a few cows.

Unless the separator is properly cared for it can be a source of considerable contamination of the cream and improper cleaning may result in damage to the machine and in lowering its efficiency. The separator should be completely dissembled and washed after each separation. A procedure for washing separators which was developed recently and which has proven to be very efficient and very simple is as follows:

1. After all milk has left supply tank, shut off the power or stop turning.
2. Rinse the supply tank with a cup of warm water and then shut off the faucet.
3. Place a tablespoonful of a wetting agent in the supply tank, pour in a full pail of warm water (120° F.) and stir to dissolve the wetting agent. Let this run through the separator while the bowl is running down. While the solution is running from the machine brush the supply tank inside and out and the outside of the cream and skimmilk spouts with a soft brush.

4. Pour the solution, which has gone through the machine, into a dishpan.
5. Dismantle the machine. The supply tank, spouts, float and inlet will seldom need further cleaning, although there may be some foam on them. Place the parts in the supply tank.
6. Open the bowl. Place the disks on the disk rack and spread them apart for inspection. The disks will usually be clean but in case they are not, set them in the solution and run the brush up and down the holes several times, pumping the water through them. Shake the disks apart, inspect again and place in the supply tank.
7. The slime in the bowl will be soft and easily removed with a soft brush.
8. After all the parts are in the supply tank pour a kettle of boiling water over them, drain and allow to dry.

#### 9. EFFICIENT STRAINING OF MILK

There are many types and methods of straining milk but the only approved method is to use the filter type strainer that requires a special filter pad in the bottom, which efficiently removes extraneous material and which has the further advantage of being used but once. Strainers made from floursacks, cheese cloth, or wire strainers are very ineffective. Proper filtration of milk improves its general appearance by removing dirt and extraneous matter, but does not significantly improve the quality or keeping quality because the organisms contained on the dirt have very likely dissolved into the milk by the time the milk is filtered. It is highly important that extraneous matter be kept out of milk by having clean cows, by protecting the utensils from contamination with dust and dirt, and by protecting the milk in open buckets from contamination from dust in the air. The filter should be used only for removing the slight amount of extraneous material that accidentally gets into the milk during the milking and handling.

#### 10. PROPER STORAGE OF DAIRY PRODUCTS ON THE FARM

In the storage of various dairy products on the farm it must be remembered that these products absorb odors very easily. For instance, milk placed in an open vessel in a refrigerator along with fruits or vegetables giving off pronounced odors, such as cantaloupes, bananas, onions, etc., will absorb the odors in the refrigerator rather quickly. It is obvious that dairy products should not be stored in a musty cellar or in

any other place having pronounced odors. The storage room should be cool, free from odors, and protected from vermin. Occasionally trouble is experienced with cockroaches or red ants. These insects should be destroyed if possible, but protection can be afforded by setting the utensils containing the dairy products in a pan of water.

## MANUFACTURE OF DAIRY PRODUCTS ON THE FARM

### BUTTERMAKING

Although most of the butter manufactured in Oklahoma is processed in commercial creameries there is still a considerable quantity churned on the farms. Many people prefer country-made to creamery butter and many farm people find it to their advantage to make their own butter. In the commercial creameries, reasonably good butter can be uniformly made from ordinary cream, but on the farm it is rather difficult to make a uniform product because of the lack of proper equipment and lack of skill on the part of the farm butter-maker. If the proper equipment is obtained and if care is exercised in performing the necessary operations in butter manufacture, a uniformly good product can be made on the farm.

*Equipment and materials needed:* For farm buttermaking the equipment and materials needed include a floating dairy thermometer, churn, strainer, wooden butter bowl, wooden butter ladle, butter color, salt, and butter parchment paper. Other equipment and materials that may be needed are a cream stirring rod, one-pound wooden butter mold, butter cartons, scales, and a stiff fiber scrubbing brush and washing powder for proper cleaning of the equipment after churning.

*Protection of high quality cream:* Good butter cannot be made from poor quality cream. The butterfat in freshly drawn milk is free from off-flavors and odors except those that may be due to the feed consumed by the cow. If the cream is produced and handled under careful conditions, it will yield a high quality butter, but if it is handled carelessly, the butter from it may be very poor. The most important factors concerned in the production of high quality cream are discussed in the first part of this circular.

*Pasteurization:* Although pasteurization of milk and cream is not a common farm practice, this process greatly improves the keeping quality of dairy products, destroys disease producing organisms and eliminates churning difficulties due to rancidity by destroying the enzyme causing the defect. If

pasteurization seems advisable, place the freshly separated cream in an aluminum pan and heat rapidly to 165° F. with constant stirring. Cool immediately to a low temperature and hold cold until the cream is churned.

*Cream Ripening:* Sweet cream butter is recognized as the highest grade obtainable but in many instances the making of this product on the farm is impractical because of the difficulty of keeping the cream sweet. Sour cream that has been produced under careful conditions and that is ripened properly will yield a good quality butter. The cream may be ripened by either of two methods:

1. Cool the fresh cream to 65° to 70° F. and allow to sour.
2. Cool the fresh cream to as low a temperature as possible and then, after enough cream has accumulated for a churning, raise the temperature of the cream to 70° F. and allow to sour. With either method, allow the cream to develop only a mild acid flavor as further ripening will lower the fresh quality and the keeping quality of the butter. If the cream has been pasteurized and sour cream is desired, the cream must be inoculated with a small amount of clean, sour cream or milk before ripening.

*Churning Temperature:* As soon as the cream has developed the desired acidity, mix together the different lots of cream to be used, cool to the churning temperature and hold for at least two hours before churning. Adjust the churning temperature so that with sour cream the butter granules will form in from thirty to forty minutes and with sweet cream in from forty to fifty minutes. If the cream is too cold, it will churn with difficulty while if the cream is too warm, it will churn too quickly. The losses of fat in the buttermilk will be high and the butter will be too soft to work properly. Since the hardness of the fat is largely governed by the feed that the cow consumes, the fat is usually hard in winter and soft in the spring and summer. The proper churning temperatures usually range from 50° to 60° F. in the winter and 45° to 55° F. in the summer.

*Preparation of Equipment:* Clean and sterilize all the equipment before using. Wash the strainer, churn, butter working bowl, ladle, and other equipment coming in contact with the cream or butter, with warm water and washing powder, using a stiff brush on all surfaces. Scald the cleaned

utensils thoroughly with boiling water and then chill in clean, cold water. After cleaning, place the wooden equipment in a pail of cold water until needed.

*Churning:* Pour the cold cream through a strainer into the thoroughly chilled churn, filling the churn from one-third to one-half full. In order to maintain a uniform color throughout the year, add a small amount of butter color to the cream during the winter months when the color is likely to be light. The amount required is usually ten to thirty drops per gallon of cream. If possible, churn the cream and work the butter in a cool room so that the butter will not be too soft. Turn the churn at a speed which will give the maximum amount of agitation; this is the speed which requires the greatest amount of force to turn the churn. With a barrel churn, it is necessary to stop every few minutes during the early stages of churning, and open the air vent to allow the gas to escape. Stop the churning when the butter granules are the size of large grains of wheat or small peas.

*Washing and Working:* Drain off the buttermilk, using a strainer to catch the granules which would otherwise be lost. Thoroughly rinse the granules by pouring cold water over them, fill the churn one-third to one-half full of cold water, turn the churn a few times and drain, and then repeat this washing operation. The temperature of the wash water should normally be about the same temperature as the cream when churned, but if the butter is soft, use colder water and allow the butter granules to remain in the water until they become firm.

*Working and Salting:* Weigh the butter granules and place in the chilled wooden working bowl, sprinkle fine salt over the granules, using from one-half to one tablespoonful of salt for each pound of butter, and sprinkle on a small amount of water to help dissolve the salt. Regular butter salt should be used as ordinary table salt is difficult to dissolve and sometimes contains an insoluble substance. The purposes of working butter are to gather the butter into a mass, incorporate the moisture and salt and to remove excess moisture. Work the butter with a pressing rather than a sliding action as the latter will give it a greasy body. Work until the butter is free from holes, water pockets and undissolved salt. Test the butter for grittiness or undissolved salt by squeezing a small piece between the fingers.

*Packaging:* Pack the finished butter in butter jars or mold into rolls or rectangular prints, wrap in butter parchment and store in a cool place free from odors. Special butter

molds are available for molding the butter or it can be done by skillful use of the hands. The finished packages should be neat, attractive, and uniform in weight and appearance.

*Storage:* Store the butter in a cold place that is free from odors and flavors. Butter often deteriorates rapidly at temperatures above 50° F. and absorbs odors and flavors very easily. Butter that is to be held for longer than one week may be stored in salt brine by closely packaging the prints or rolls in a stone jar or clean wooden keg and covering with brine. The brine is made by dissolving two and one-half pounds of clean salt in each gallon of clean water used. Place a clean board or porcelain plate on top of the butter and put a weight on top to keep the butter below the surface of the brine. Cover the container tightly and keep in the coolest place available.

Butter may also be preserved in a cold storage locker by packing the butter in stone jars or wide mouth fruit jars, or by wrapping very carefully to exclude air and light. The keeping quality of butter preserved in brine or held in cold storage largely depends on the quality of the cream from which it was made. Good keeping quality can be assured by using fresh sweet cream, pasteurizing, avoiding contamination during manufacture, and storing in light-proof and odor-proof containers.

#### COTTAGE CHEESE MAKING

*Selecting of Milk:* Use only fresh, clean skimmilk. Milk which is produced under unsanitary conditions is likely to be contaminated with bacteria which cause a gassy curd and undesirable flavors and odors in the finished cheese.

*Ripening or Souring:* Adjust the temperature of the skimmilk to 70° to 75° F. and allow to sour or coagulate at this temperature. Coagulation may be hastened by mixing about one-half cup of clean, sour milk with five gallons of the fresh milk. If the milk is not inoculated, it will usually be firmly coagulated in twenty-four hours while if it is inoculated, coagulation is usually complete in twelve to fifteen hours.

*Cutting the Curd:* Cut the curd as soon as it is firm enough. This can be determined by inserting a thermometer in the curd at an angle, slowly raising the thermometer to the surface and noting how the curd breaks. If the curd breaks clean over the thermometer it is ready to cut. Cut the curd into pieces approximately one-quarter or one-half inch cubes



with a long knife or long handled spoon. The curd particles should be uniform because during the cooking the small particles may become too dry while the large particles may be too moist.

*Cooking:* The cooking determines to a large extent the texture of the finished cheese. Heat the curd carefully to a temperature of 100° to 120° F. and hold at this temperature for about fifteen to thirty minutes until the desired firmness is obtained. In general, a high final cooking temperature will result in a firm, dry curd and a low cooking temperature will result in a soft, moist curd.

The cooking may be accomplished by heating on a stove or by adding hot water. With the first method, set the container in another container partly filled with warm water. Heat slowly so that the temperature of the curd will raise one-half to one degree per minute, occasionally stirring very gently to insure uniform heating but avoid breaking up the curd particles. If the hot water method is used, heat to boiling a quantity of water equal to one-half to two-thirds of the amount of milk used, pour it slowly into the curd and whey immediately after cutting, stirring slowly to insure uniform heating. With this method, the final cooking temperature will depend on the amount of boiling water used. With either method hold the curd at the final cooking temperature until the desired firmness is obtained, stirring occasionally to prevent matting. A spoonful of curd cooled in a glass of cold water for several minutes gives a good indication of the texture of the finished cheese.

*Draining, Washing, and Salting:* When the curd has reached the desired firmness, drain off the whey through a colander, wire strainer or cheese cloth. Cool the curd by placing it in as much cold water as there was whey, stirring gently to assist in uniform cooling. After ten or fifteen minutes, drain off this water. Repeat the washing once or twice if a milder flavor is desired. Drain the curd in a wire strainer, colander or cloth bag for an hour or longer, keeping it as cool as possible. Salt the drained curd to taste, using about one teaspoonful per pound of curd, sprinkling the salt on slowly as the curd is mixed.

*Creaming:* Cream the cheese just before serving, using one-quarter to one-half cup of cream per pound of curd. Ordinary farm separated cream is usually too rich and should be diluted with equal parts of fresh, whole milk.

*Storage:* Cottage cheese is best when it is fresh and is not ordinarily held for more than two days before being consumed. Pack the uncreamed, finished cheese in glass, crockery, or enameled containers and hold in a cool place. The containers should be light-proof or be kept in a dark place as strong light affects the flavor. Cheese held in an icebox or mechanical refrigerator will remain usable for several days. The keeping quality of the cheese can be prolonged if it is kept in a cold salt solution made by dissolving six tablespoonsful of salt per gallon of clean water. Use enough salt solution to completely cover the cheese and store in a light-proof glass, enamelware or crockery container in a cold place. Fresh, uncreamed cottage cheese may also be preserved for future use by placing in fruit jars, wrapping the jars in paper and storing in a cold storage locker.

#### CHEDDAR CHEESE MAKING

*Equipment Needed:* The equipment needed for cheddar cheese making on a farm includes: a well tinned wash boiler or similar container, floating dairy thermometer, long handled knife or spatula, long handled spoon, large dipper, large strainer, cheese cutter, salt, rennet extract or rennet tablets, muslin cloth, and clean freshly soured milk.

*The Milk Supply:* Use only milk which is fresh and clean and which has been produced under careful conditions so that it will be low in contamination. Milk which is old or which is highly contaminated will likely produce cheese which is gassy, unclean or bitter in flavor. A gallon of milk will usually yield slightly less than one pound of cheese. Since the finished cheese should weigh between five and ten pounds, five to ten gallons of milk are used with each lot. A convenient amount is about thirty quarts or seven and one-half gallons.

*Setting the Milk:* The milk is coagulated by the combined action of rennet and lactic acid. This acid is developed by organisms in the sour milk which is added to the fresh milk when it is set. The milk is warmed to 86° F. and clean, freshly soured milk is added to start the acid formation, using two and one-half to three tablespoonsful per gallon of milk or slightly more than one cup for seven and one-half gallons. Add the cheese color after adding the starter or soured milk using about a half teaspoonful for seven and one-half gallons. The amount of cheese color is varied with the season of the year. Next add the rennet, using about a teaspoonful of rennet extract or one and one-half rennet tablets for seven and one-half gallons. This rennet extract is diluted with about a cupful of cold water

and the milk is stirred vigorously while the diluted extract is added slowly. Continue to stir the milk for two or three minutes after adding the rennet, then let stand until firmly coagulated which requires about thirty minutes.

*Cutting and Stirring the Curd:* The curd is cut as soon as it is firm enough. This can be determined by inserting the thermometer or finger into the curdled or coagulated milk at an angle and raising it to the surface noting how the curd breaks. If it breaks clean, and the whey in the pocket formed is clear, it is ready to cut. Perhaps a better way is to note the exact time when the milk starts to coagulate and cut the curd in two and one-half times the coagulating time. For instance, if the milk starts to coagulate in ten minutes, the curd is cut twenty-five minutes from the time the rennet was added. In commercial cheese plants the curd is cut with cheese knives which are frames with wire strung across them at one-quarter to one-half an inch intervals. There are two knives, one with horizontal wires and one with vertical wires so that the curd can be cut into cubes. In home cheese making, the curd is cut in two directions with a long bladed knife and then broken carefully into the cubes about one-fourth to one-half inch in size. After cutting, the curd is allowed to stand for a few minutes before stirring. Stir the curd very slowly and gently to avoid breaking the cubes. Stir with clean hands for the first few minutes or until a considerable amount of whey has collected and then stir with a spoon.

*Cooking:* The cooking of the curd is started fifteen minutes after it is cut. Heat very slowly, raising the temperature about one to two degrees every five minutes to a final temperature of about 100 degrees in thirty minutes. It is important to continue stirring the curd during the heating process to insure uniform distribution of the heat and to prevent the curd from matting. The stirring is done carefully so that the curd particles are not broken. The cheese is held at the final cooking temperature until the particles are definitely firm, are meaty in consistency, and have no soft centers. When a handful of curd is squeezed gently and the pressure is released the particles should spring apart rather than stick together. The cheese is usually left in the whey one to one and one-half hours before the whey is removed. It is necessary to stir at frequent intervals during this cooking period to prevent matting of the curd.

*Dipping or Draining:* The curd may be dipped out of the whey with a strainer and placed on a draining cloth or the curd and whey may be poured from the container on to a large draining cloth. Stir the curd during the draining process to

prevent the particles from matting and to assist in the removal of the whey. Placing the draining cloth containing the drained curd in a large dishpan and keep at a temperature of 85° F. until ready to salt stirring frequently to prevent matting.

*Salting:* The cheese is salted after it has drained completely, has developed considerable curd, and has assumed a rubbery texture, which is usually one to two hours after the whey is removed. The hot iron test can be applied as follows: Heat an iron rod hot enough to stick to the curd, touch it to a piece of the curd, then pull away carefully. The cheese is ready to salt if the strings formed are about one inch long. The curd is salted by sprinkling the salt over it in two or three applications, stirring thoroughly between each application and allowing the salt to dissolve before applying more. Salt it at the rate of about five tablespoonsful of salt for each seven and one-half gallons of milk used. The salting process requires thirty minutes or longer so that each application of salt will be thoroughly dissolved and will diffuse into the cheese.

*Pressing:* The cheese is pressed when the salt is completely dissolved. Prepare the cheese for pressing by placing the curd on a piece of clean muslin, about one yard square, draped over a large pail or dishpan. Gather the loose ends of the cloth in one hand over the curd and with the other hand work the curd into a compact ball, constantly drawing the cloth tighter as the curd is shaped. Tie the cloth as tightly as possible with a piece of string, like you would tie a cloth sack. Press the cheese by placing the ball of curd, contained in the muslin bag, on a clean board, placing another clean board on top and then pressing by placing a heavy object on the top board or by exerting pressure with a home made cheese press. Press lightly at first, then gradually increase to a maximum of about one-hundred pounds or more in forty-five minutes to one hour. A home made cheese press is easily devised by placing one end of an eight-foot 2x4 under a solid object, such as a cleat nailed to a wall, placing the cheese under the board eighteen inches from the solid end and hanging a bucket of water weighing twenty-five pounds on the free end. Hang the bucket eighteen inches from the center of the cheese in the beginning, then move it out toward the free end eighteen inches at the end of each fifteen-minute interval. This will give pressure of approximately fifty in the beginning and seventy-five, one hundred, and one hundred twenty-five pounds pressure at the end of fifteen, thirty, and forty-five minutes, respectively. Continue the pressing for sixteen to twenty-four hours in a room at a temperature of 70° to 75° F

**Paraffining:** After pressing, carefully remove the cloth and allow the surface to dry for a day or two, then dip the cheese in melted paraffin at a temperature of about 220° F. for eight to ten seconds so that a uniform film of paraffin covers the cheese. If no paraffin is available, the surface of the cheese may be rubbed with butter or butter oil, repeating this treatment two or three times at one or two-day intervals. This tends to protect the cheese from excessive loss of moisture due to the drying which would occur.

**Curing or Ripening:** The cheese is cured by placing on a clean shelf in a room that is reasonably cool. A temperature of 50° to 55° F. is most desirable, but satisfactory cheese may be obtained by curing at slightly higher temperatures. The cheese is turned daily for the first week or two and the shelves are kept thoroughly cleaned at all times. Later the cheese may be turned less frequently but occasional turning is required until the cheese is thoroughly ripened. The cheese will usually acquire a mild cheese flavor in three to four weeks, but for a more highly flavored cheese, the ripening is continued for three to four months. Instead of pressing the cheese in a cloth, the curd may be packed tightly in fruit jars after it is very thoroughly drained. The jars are scalded and dried, and the covers placed on them lightly so that the gas may escape. The jars are then set in a cool place for the cheese to ripen.

#### PREPARATION OF BUTTERMILK

The nutritive properties of buttermilk are practically the same as those of skimmilk and many people prefer this drink to ordinary milk. Since buttermilk contains a considerable amount of lactic acid it keeps much better than ordinary milk and this is a distinct advantage on the farm. There are two general methods of making buttermilk, one involving the souring of the buttermilk from a churning of butter, and the other involving the souring of skimmilk. If butter is made from sweet cream the quality of the buttermilk can usually be improved by inoculating the fresh product with some clean sour milk, using about one tablespoon per gallon. This same procedure can be used for inoculating fresh skimmilk. The skimmilk or buttermilk should then be held at a temperature of about 70° F. until the desired thickness of curd and flavor are obtained, which will usually require fourteen to sixteen hours. The curd should then be broken up by stirring rapidly and the buttermilk may be placed in thoroughly scalded containers and held in a cold place until used. Although pasteurization is

not commonly practiced on the farm there is a distinct advantage in pasteurizing skimmilk or sweet cream buttermilk before inoculation because this method insures uniform results.

#### HOME PASTEURIZATION OF DAIRY PRODUCTS

Ordinarily, dairy products used on the farm are consumed in the raw state, but there are several advantages to pasteurization of milk and cream. Proper pasteurization will destroy all disease producing bacteria which may be present in the raw milk in addition to those types that cause spoilage. Pasteurization also destroys certain enzymes which hasten the deterioration of milk and cream. Although many people claim that they do not like the taste of pasteurized milk, it is generally agreed that because pasteurization improves the keeping quality of milk, the prevention of the development of off flavors more than compensates for the slight cooked flavor which may be detected in home pasteurized milk.

Milk or cream may be pasteurized in the home by heating rapidly in an aluminum pan or double boiler to a temperature of 165° F. and then cooling immediately. The milk or cream should be stirred constantly to hasten the heating and cooling and to prevent burning and scorching. After heating, it may be cooled by partially immersing the container in cold water and stirring during the cooling. After partial cooling, the container may be placed in a refrigerator. The pasteurized milk or cream may be stored in thoroughly scalded milk bottles and held as cold as possible until used.

#### USES OF DAIRY PRODUCTS ON THE FARM

##### MILK, MILK DRINKS, AND MILK USES IN COOKING

Milk is our most valuable and complete single food. It furnishes the greatest number of nutritive elements necessary for growth and health. It is always available, easily prepared, easily digested and may be used in countless different ways.

The proteins furnished by milk are of the best possible quality for the building of muscles and body tissues. A sufficient amount of milk in the daily diet is absolutely necessary for normal health and growth of children.

As a source of energy, milk ranks among the first in the classification of foods.

### **Cottage Cheese Dishes**

Cottage cheese lends itself especially well to salads. If enough is used the salad may serve as the main dish of the meal. French, mayonnaise or boiled dressings go well with cheese salad. The cheese may be formed into balls or slices; it may be molded in tiny cups or passed through a pastry tube.

### **Stuffed Prune Salad**

For stuffed-prune salad remove the stones from cooked prunes. Stuff prunes with cottage cheese which has been seasoned with salt and pepper. Serve on lettuce leaves with mayonnaise dressing. Dates or figs may be used instead of prunes if desired.

### **Cottage Cheese Mayonnaise**

In making cottage cheese mayonnaise use 1 cupful cottage cheese, 1 tablespoonful sugar,  $\frac{1}{2}$  teaspoonful mustard,  $\frac{1}{2}$  teaspoonful salt,  $\frac{1}{2}$  teaspoonful paprika and  $\frac{1}{2}$  cupful olive oil. Mix thoroughly the first five ingredients. Stir in the oil gradually. This dressing will not keep long without separating and should be made immediately before serving.

### **Cottage Cheese Pie**

In making cottage cheese pie use 1 cupful cottage cheese;  $\frac{3}{4}$  cupful sugar,  $\frac{3}{4}$  cupful milk, 2 egg yolks, beaten, 1 tablespoonful melted fat, salt and  $\frac{1}{4}$  teaspoonful vanilla. Mix the ingredients in the order given. Bake the pie in one crust, prepared in the usual way. Cool it slightly and cover it with meringue made by adding 2 tablespoonsful of sugar and  $\frac{1}{2}$  teaspoonful of vanilla to the beaten whites of 2 eggs and brown in a slow oven.

### **Yellow Cream Cheese Preparation and Uses**

The method of preparing Yellow Cream Cheese is to use a rather dry cottage cheese from at least  $2\frac{1}{2}$  gallons of milk. Work the cottage cheese through a fine meshed screen to break up all the particles. Take a quart of pulverized curd, one level teaspoonful soda, one-half pound of butter, and mix thoroughly. Place in a double boiler and melt slowly. Heat till a smooth consistency is obtained, stirring constantly. If the mixture becomes ropy or the butter separates out, continue heating and violent stirring. Remove from stove, add  $\frac{1}{4}$  pint of thick sour cream, 1 teaspoonful salt, and a few drops of cheese coloring. Mix well and pour into a bowl. Cool it, and it will be ready to be used. It may be used in the same manner as Cheddar cheese, in cooking, salads, and sandwiches, although it has a higher moisture content.

The advantages of this cheese are as follows:

1. It can be made in forty minutes, after which it is ready to be eaten.
2. No curing process is necessary.
3. It requires five foods found in practically all homes. Only cheese coloring is needed in addition to the five other ingredients.
4. Heating it pasteurizes the product, and makes it a safer food.
5. No equipment is needed except that found in the average farm home.
6. It is one of the most economical foods in the home.
7. The food value is high.
8. The cheese is very palatable and highly digestible.
9. This cheese may be used as a sandwich spread, in salads, and in cooked or baked dishes; just the same as Cheddar cheese.

The disadvantages are:

1. The keeping quality is low and the cheese should be used within five to ten days depending on the storage temperature.
2. Unless a rather dry cottage cheese is used with very thick sour cream in making the cheese, it will be too soft to slice.
3. The flavor is too mild for many palates.

#### **Ice Cream Preparaion and Serving**

To prepare a raw mix, first beat the whites of three eggs, and the yolks slightly in a separate dish. While this is being done the dissolving of two level tablespoonsful of gelatin in one-third cup of warm water may be started. (This may seem strange to folks on the farm, but gelatin is an extremely digestible useful food and gives smoothness and body to the ice cream. As it costs only two cents to the gallon, it may be recommended without any reserve.)

Mix the whites and yolks of eggs and add two cups of sugar while this is being stirred constantly. This will make a partial solution of the eggs and sugar.

Keep stirring this and add a quart of whole milk.

This may be stirred and the dissolved gelatin added.

If a golden colored ice cream is desired, 20 to 60 drops of cheese coloring may be added. However, this may be omitted because it does not add to the food value of the ice cream but just gives it a yellowish, rich looking color.

Stir in a teaspoonful of vanilla extract.

Whip a quart of 30 percent cream and add the mixture, stirring it well. Before this is poured into the freezer it would be a good plan to keep half a cup of the mixture for testing and studying the relations of the various flavors in the mixture.

Before this is poured into the freezer we must be absolutely sure that the freezer has been very thoroughly scrubbed, as taught in the chapter on utensil cleaning, and thoroughly scalded before using.

The mixture should be poured into the freezer so that it is filled up about one-half or three-fourths full. Do not fill up the freezer with the mixture because it will expand and raise the lid. While the ice is being crushed the freezer should be turned continually to keep the parts of the mix from settling.

One measure of ice cream salt should be mixed with eight measures of crushed ice in a tub. Then the mixture of ice cream salt and ice should be placed in the freezer bucket while the crank is being turned continually. The top of the drain hole should be on a level with the lower rim of the lid which covers the ice cream mix and should be open so salt water cannot run into the mix.

To secure a nice smooth ice cream the freezer may be turned slowly until freezing commences. After that it should be turned rapidly. After freezing has progressed so that it turns hard, the lid should be wiped and removed, the paddles taken out, the hole stopped up in the freezer lid and the lid replaced on the can.

In some cases the water is all drained out and fresh ice mixture added to harden the ice cream. This, of course, will make a little firmer ice cream. However, more of the one-to-eight mixture should be added and the ice cream then should harden from two or more hours.

Two additional ice cream recipes have been tried and have proved quite successful. For one gallon of ice cream the following recipes may be easily prepared in the home. An uncooked mix may be improved by



using gelatin to increase smoothness and body in the ice cream. Flour is used in cooked mixes instead of gelatin. The quantity of mix when ready to freeze will be nearly three quarts. While freezing, it will expand to approximately a gallon of ice cream.

**Vanilla Ice Cream**

- |            |                                |
|------------|--------------------------------|
| 2 c. sugar | 1 qt. milk                     |
| 2 T. flour | 20 to 60 drops cheese coloring |
| ¼ t. salt  | 1 t. vanilla extract           |
| 3 eggs     | 1 qt. cream.                   |

Mix sugar, flour and salt; add beaten eggs and milk. Cook in double boiler, stirring for 20 minutes or until slightly thickened. Remove from stove, and when cold add coloring, vanilla and whipped cream. Freeze by using 1 measure of ice cream salt to 8 crushed ice mixed and packed into freezer. Pack for two hours.

**Fruit Ice Cream, Pineapple Favorite**

- |   |                               |
|---|-------------------------------|
| 4 slices canned pineapple<br>chopped fine | 2 T. gelatin<br>1½ T. gelatin |
| 1 c. pineapple juice                      | 1½ c. hot water               |
| 2 lemons                                  | 1 c. sugar                    |
| 1½ c. whipping cream                      | 2 c. milk                     |
| 2 t. pineapple extract                    | 4 egg whites beaten           |

Put pineapple into a bowl, add strained juice of lemon and pineapple. Then add whipped cream and extract. Dissolve gelatin in water with sugar. When cool strain into mixture. Add milk and egg whites. Freeze and pack for three hours.

The serving of ice cream with fruits, fruit syrups or chocolate syrup add to the attractiveness and food value.

Ice cream supplies the glamor for summer meals. Electricity on farms makes refrigerator ice cream an easy task. Dipping lightly into the family's sugar supply and still eating ice cream is possible. The following recipes illustrate these points. In general almost any ice cream mix may be frozen in a mechanical refrigerator. The mix is placed in the refrigerator freezing compartment and the temperature control turned to the lowest point until the mix is firm. Then remove, place in a cold bowl, beat with a wooden spoon or electric mixer until mix is smooth in texture and has increased in volume. Work quickly so it does not melt completely. Return to refrigerator for a few hours to harden. Then the ice cream is frozen turn the refrigerator back to normal temperature control. For families who do not have refrigerators, the regular ice cream freezer may be used. This will make a smoother ice cream due to the stirring it receives.

**Londonderry Ice Cream**

The commercial mixtures have some of the parts of the ice cream mix prepared in a handy package. To use these, especially when small quantities of ice cream are made, time and labor can be saved.

- |                  |             |
|------------------|-------------|
| 1 t. Londonderry | ½ pt. cream |
| 2 T. sugar       |             |

Mix the Londonderry and sugar thoroughly. Add ½ pint cream, which has been chilled. Beat with electric mixer in a deep bowl. When the cream thickens and will hold shape, pour into a dry, cold tray. Place in the coldest section of the refrigerator.

**Variety Ice Cream**

Peaches, berries, cantaloupe, grapes, apricots and rhubarb are suitable for ice creams commonly called fruit ice cream.

3 c. fruit puree	½ t. salt
1 c. sugar or white corn syrup	1 T. gelatin
1 T. lemon juice	¼ c. water

Slice 3 pounds fruit. Mix ½ cup sugar or syrup with 4 cups water and heat this mixture. Place fruit in boiling syrup for 3 minutes to save the fruit color. Cool this mixture and press through a sieve. This should make 3 cups of puree.

Mix the puree, the balance of sugar or syrup, lemon juice and salt. Soak the gelatin in cold water for 5 minutes, then heat over boiling water for 10 minutes. This will prevent the congealing of gelatin. Add mixture to the gelatin slowly, pour into trays and freeze. Stir a second time after freezing starts.

**Lime Ice Cream**

½ c. syrup	2 t. grated lemon rind
½ c. sugar	1 c. thin cream
2 eggs	1 c. milk
¼ c. lime juice	5 drops green fruit coloring

Beat eggs until thick and fluffy. Add sugar and corn syrup slowly. Next stir in the juice, rind, cream and milk. Then add coloring. Pour into refrigerator trays and freeze for one hour. Remove from refrigerator, beat thoroughly and freeze until firm.

**JUDGING DAIRY PRODUCTS****Milk Judging and Score Card**

Judging milk properly is rather difficult on the farm, but the score card will be helpful in judging the quality of milk. A sediment test, bacterial count, and taking of temperature may not be possible. However, the score card shows the defects which may be found in a sample of milk.

**Milk Score Card**

**Flavor:** The perfect score is 45; normal range is 25 to 40. The common criticisms on flavor are bitter, cooked, cowy, disinfectant, feed, flat, garlic, or onion, high acid, malty, metallic, musty, oxidized, rancid, salty, unclean, and weedy.

**Sediment:** The perfect score is 10; normal range is 5 to 10. This is not criticized.

**Container and Closure:** The perfect score is 5; normal range is 3 to 5. The common criticisms are unsealed, not full, dirty, closure leaky, chipped lip, lip unprotected, lip partly protected, non-waterproof cover, and torn closure cover.

**Bacteria:** The perfect score is 35 and allowed perfect in contests.

**Temperature:** The perfect score is 5 and allowed perfect in contests.

**Ice Cream Judging and Score Card**

Judging ice cream is not difficult. By careful examination and tasting ice cream, a fairly accurate score may be determined.

**Ice Cream Score Card**

**Flavor:** The perfect score is 45; normal range is 31 to 40. The common criticisms on flavor are cooked, egg, feed, high acid, lacks fine flavor,

lacks flavoring, lacks freshness, lacks sweetness, metallic, neutralizer, old ingredients, oxidized, rancid, salty, storage, unclean, and unnatural flavoring.

**Body and Texture:** The perfect score is 30; normal range 25 to 39.5. The common criticisms are buttery, coarse or icy, crumbly, fluffy, sandy, soggy, and weak.

**Melting quality:** The perfect score is 5; normal range is 4 to 5. The common criticisms are curdy and does not melt.

**Color and package:** The perfect score is 5; normal range is 3 to 5. The common criticisms are color uneven, color unnatural, no parchment, rusty can, and unclean can.

**Bacteria:** The perfect score is 15 and allowed perfect in contests.

#### **Butter Judging and Score Card**

The quality of butter needs careful consideration. Much improvement is required to assure full appreciation of this valuable food. Instead of an 89 score butter, we should make and use 92 or 93 score butter in the home.

#### **Butter Score Card**

**Flavor:** The perfect score is 45; normal range is 31 to 39. The common criticisms are acidity, bitter, briny, cheesy, coarse, cooked, cowy, feed, fishy, flat, garlic, gasoline, malty, metallic, musty, neutralizer, oily, old cream, rancid, storage, tallowy, unclean, weedy, woody, and yeasty.

**Body and Texture:** The perfect score is 25; normal range is 23 to 25. The common criticisms are cloudy rine, crumbly, gummy, greasy, leaky, mealy, salvy, sticky, and weak.

**Color:** The perfect score is 15;; normal range is 13 to 25. The common criticisms are color specks, mottles, uneven, wavy, and white specks.

**Salt:** The perfect score is 5; normal range is 4 to 5.

#### **Cheese Judging and Score Card**

Most of the cheddar cheese on the market is rather green, and will not score very high. To help in the appreciation of well cured cheese of high quality it is important to follow a guide or score card.

#### **Cheese Score Card**

**Flavor:** The perfect score is 45; normal range is 35 to 42. The common criticisms on flavor are acidity, bitter, cowy, feed, fermented, flat, fruity, heated, moldy, rancid, unclean, weedy, and yeasty.

**Body and Texture:** The perfect score is 30; normal range is 26 to 29.5. The common criticisms are corky, crumbly, curdy, flaky, gassy, mealy, open, pasty, spongy, curd holes, weak, and yeast holes.

**Finish:** The perfect score is 15; and allowed perfect in contests.

**Color:** The perfect score is 10; normal range is 9 to 10. The common criticisms are acid cut, mottled, seamy, and wavy.

### **GUIDE TO HOME DAIRY DEMONSTRATIONS**

#### **Requirements**

In connection with Home Demonstration Club work, regular demonstrations are outlined in home dairy work. Women interested in this work are termed demonstrators. Farm women who wish to carry this work should conform to the following requirements; Keep at least two dairy cows so that the milk supply may be constant throughout the year, and reserve at least one gallon of milk daily for a family of five. This should

furnish a quart a day for each child and at least a pint for each adult. The milk may be used as a drink or in prepared dishes. Butter should be used at the table three times daily. This of course should be dairy butter and not substitute. An endeavor should be made to use other dairy products in harmony with the demonstrations outlined in this bulletin.

### **Equipment**

To produce sanitary dairy products, to save labor and avoid drudgery, it is necessary to have equipment, including buildings, machinery, and utensils. First of all, a sanitary barn which will meet Grade A requirements is needed. Blueprints of farm buildings may be secured from the county agents. A milkhouse is next in line, to care for the dairy products and to help retain their high quality. A milking machine is a labor saver and eliminates much work which is not enjoyed by many people. A cream separator is needed for people who sell cream and make butter in the home. Electricity in the home is another great help and labor saver. Vats for washing milk utensils, water heaters, brushes, hooded buckets, well tinned cans, dairy thermometers, and other equipment will help in clean production of dairy products.

### **Yearbook Plans for Home Demonstration Clubs**

**Subject:** Dairy Production.

**Quotation:** "The people who have achieved, who have become large, strong, vigorous people, who have reduced their infant mortality, who have the best, who are progressive in science and in every activity of the human intellect, are the people who have used liberal amounts of milk and its products."

—Dr. E. V. McCollum, Johns Hopkins University.

**Roll Call:** Members may respond to this question: What we are doing to increase milk production.

**Discussion:** Number and kind of cows needed for the family milk supply.

**Feeding and care of cows.**

**Demonstration:** Selecting a good dairy cow.

**References:** Oklahoma Extension Circular 321, Feeding Cows for Milk Production; Oklahoma Extension Circular 173, Dairy Management Manual.

**Subject:** Dairy Sanitation.

**Quotation:** "Every person, young or old, should drink milk. Milk contains a large variety of nutritional constituents and considering its cost per pound more food for the money than any other food material available. It is indispensable for both the young and aged."—Dr. Charles Mayo, Mayo Clinic.

**Roll Call:** Members may respond to this question: How we wash our milk utensils and cream separator.

**Discussion:** Cleaning dairy utensils with less labor and more effectively.

**Demonstration:** Washing a cream separator or dairy utensils.

**References:** Oklahoma Extension Circular 404, Improving the Market Value of Milk and Cream; Oklahoma Publication Circular 78, Dairy Farm Sanitation; U. S. Department of Agriculture Leaflet 177, Pasteurization of Milk; U. S. Farmers' Bulletin 1675, Care of Utensils on the Farm; U. S. Farmers' Bulletin 1818, Mechanical Milk Cooling on the Farm.

**Subject:** Dairy Foods.

Quotation: "Certainly it seems to me the boy should have his quart of milk per day until he is a full grown man and the girl should continue to take her quart of milk per day until she has weaned her first child."—Dr. H. C. Sherman, Columbia University.

Roll Call: Members may respond to this question: Which is my favorite dairy food?

Demonstration: Making yellow cream cheese and preparing cheese the daily diet.

Demonstration: Making yellow cream cheese and preparing cheese dishes.

References: Oklahoma Extension Bulletin 267, Home Dairying; U. S. Department of Agriculture Leaflet 213, Sour Cream: How to Prepare and Use It at Home; U. S. Farmers' Bulletin 1359, Milk and Its Use in the Home; U. S. Farmers' Bulletin 1451, Making and Using Cottage Cheese on the Farm; U. S. Farmers' Bulletin 1705, Milk for the Family; U. S. Farmers' Bulletin 1734, Making American Cheese on the Farm for Home Consumption.

### **Records and Reports**

The gallons of milk produced each month should be recorded. This may be calculated by multiplying the average daily gallons by the number of days in the month. Also, one should record the average number of cows in milk during the month. The pounds of butterfat sold each month should be recorded. Finally, the pounds of cottage cheese are to be recorded. This indicates the use of some skim milk for human food.

The record of dairy products used in the home, including gallons of milk, gallons of cream, pounds of butter, pounds of cottage cheese, and gallons of skim milk, is very valuable to show its variation from month to month. In a well regulated home dairy this should not vary to any marked degree, but it might be slightly higher in the winter months than in the summer months. The reason for this is that during cold weather more of the dairy foods are required. In this part of the record it is very important to give the total value of the products used. This should be figured at farm prices and not at store prices. These figures will show that often twenty to thirty percent of the food used in many homes originates from milk.

The sales record is very easy to keep because it just enumerates the dairy products and their value or the amount received for the product.

After the report is kept for a few months the demonstrator can make a check on her progress. The sum of the products used at home and the sales should total the production record. This often will not be the case as there are losses of dairy products, but this record will be very helpful to show whether there is a loss or a gain.

**CALENDAR OF WORK**

- January:** Make high quality butter for the home  
Start home dairy record
- February:** Use a gallon of milk for family of five daily  
Cream whipping demonstration  
Remodel building or construct milkhouse
- March:** Prepare cooling tank  
Home butter-making demonstration
- April:** Use chloride sterilization for all utensils  
Prepare buttermilk  
Change oil in cream separator
- May:** Cottage cheese making  
Have herd tested for Bang's disease  
Prepare special dairy dishes
- June:** Continue Home Dairy Record  
Have well water tested  
Avoid weed flavors in milk
- July:** Home ice cream-making demonstration  
Use DDT on cows, barns and screen doors.
- August:** Study and demonstrate judging of dairy products  
Demonstrate the making of show butter  
Exhibit dairy products at community fair
- September:** Show butter and dairy products at fair  
Use a quart of milk daily for each child
- October:** Conclude Home Dairy Record  
Use dairy products in school lunch  
Test the cream separator
- November:** Hand in reports  
Study shelter for dairy cows  
Prepare cheese dishes
- December:** Plans for New Year's work  
Continue sheltering and winter care of the herd  
Christmas dairy dishes

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| U. S. Farmers' Bulletin                                   | 1705 | Milk for the Family                                     |
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**Cooperative Extension Work in Agriculture  
and Home Economics  
Oklahoma Agricultural and Mechanical College and  
United States Department of Agriculture  
Cooperating**

12047