

Colorado  
Farm  
Victory Program

U.S. DEPARTMENT OF AGRICULTURE  
BUREAU OF EXTENSION  
COLORADO STATE COLLEGE  
FORT COLLINS, COLORADO

# CLEAN MILK AND CREAM

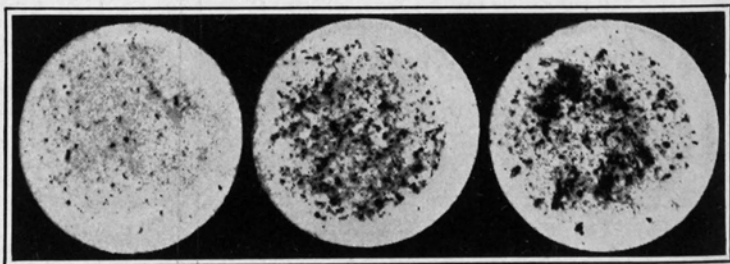
## How To Produce Them

Extension Service  
Colorado State College  
Fort Collins  
Colorado

# The Wrong Way



Dirty milk is bound to result when a cow is kept in an insanitary corral and shed and milked into an open pail by a dirty, careless milker. Seventy-five percent or more of the dirt or other foreign material in milk can be eliminated at the time of milking.



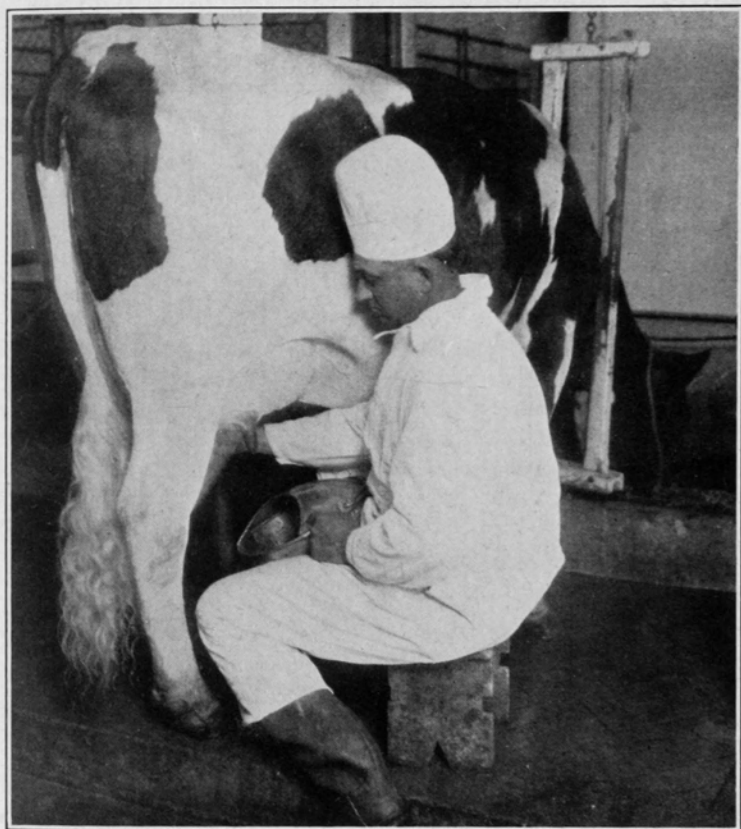
Sediment disks obtained from a pint of dirty milk showing the amount of foreign material present in milk produced the wrong way.

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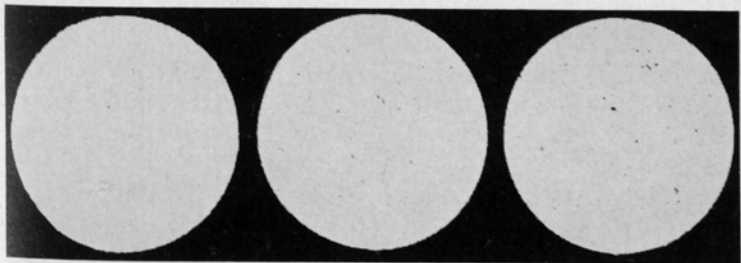
Ft. COLLINS, COLO.

MAY, 1942

## The Right Way



Before each milking this cow's body, flank and udder are brushed and wiped with a damp cloth to remove any particles of manure, dirt, dust, hairs, etc. The milker, wearing a clean suit of coveralls, thoroughly washes and dries his hands previous to milking and uses a small-top, protected, milk pail.



These sediment disks were obtained from a pint of clean milk, produced the right way.

# Clean Milk And Cream

## How To Produce Them

By H. A. SANDHOUSE, *Extension Dairyman*

Dairy products are some of our most necessary foods in the development and maintenance of strong, healthy people. Milk, butter, ice cream, and cheese are universally accepted by consumers as a part of their diet. The demand for quality dairy products is always great. Inferior products bring lower prices, and result in less consumption.

For these reasons, dairy products are protected for the consumer by State and Federal agencies, and constant watchfulness is exercised in upholding and improving the quality. Improved methods of manufacture and increased standards of quality are constantly being found and applied in every agricultural institution and manufacturing plant.

Regulations, local, State, and Federal, are provided for protection of public health and improvement of products. Every precaution possible is practiced to keep dairy products wholesome, sweet, palatable, and to improve the milk and cream supplies used in their manufacture.

**Producer's Responsibility.**—The producer is solely responsible for the quality of milk and cream which are received by the manufacturers. Poor-quality cream means a poor product, lower prices, and less consumption.

It is estimated that about 15 percent of the butterfat received in Colorado this year was graded as inferior cream and was either condemned or made into second-grade butter. Colorado producers lost thousands of dollars last year by producing inferior cream.

Another reason for the production of better grades of cream lies in the activity of the Federal and State officials in condemning and destroying insanitary cream, butter and other dairy products.

“Not only are consignments of filthy, decomposed or putrid dairy products subject to seizure, but the shippers are liable to criminal prosecution under the law. It is evident that the objec-

tionable conditions responsible are largely the result of carelessness and neglect in the handling of the cream itself, and that poor quality of the butter is traceable to the unfit character of the cream used in its manufacture."—Federal Food and Drug Administration.

When the present needs for increased production for the Victory program are so urgent, every pound of dairy products lost will eventually reflect in national losses during the year.

A definite method, known as the mold mycelia test, has been recently developed by the Federal Food and Drug Administration which enables one to determine whether or not insanitary cream or milk was used in the manufactured product. If the mold count is too high, the butter or cream is condemned, which means a complete loss, and possibly a heavy fine or imprisonment, or both. Anyone, from the producer of the milk or cream down to the manufacturer, may be prosecuted for selling, handling, buying or manufacturing dairy products which are too high in mold count.

**Losses Can Be Avoided.**—During the year of 1941 there were over 5,000 gallons of cream destroyed in the State of Colorado because it was unfit for consumption. In Colorado, climatic conditions are favorable for the production of high-quality dairy products if a few simple precautions are put into practice. The milk as it comes from a healthy cow is clean and pure. Any contamination and inferior products are due to carelessness and neglect by the producer and manufacturer.

**Disease Prevention.**—A healthy, clean cow is the first essential in the production of clean and safe milk. Milk from diseased cows should not be used for human food as it usually contains disease-producing organisms.

The most common diseases carried through milk may be divided into two classes.

(1) Those carried by the cow such as Tuberculosis, Bang's Disease and Mastitis.

(2) Those introduced into the milk from some other sources such as scarlet fever, diphtheria, and typhoid fever.

Milk is a food the quality and value of which can be easily changed by contamination, and both producers and processors should use every precaution to prevent it from becoming an inferior product.

Milk from cows with any kind of udder infection should not go into consumption channels. Slimy or ropy milk may be the cause of outbreaks of septic sore throat. To prevent contamination and

spread of the disease, cows that show inflamed or caked udders, or milk that is lumpy, ropy, or watery, should be milked last, by hand, and the milk discarded.

Clean, pure water should be used for cleaning utensils and for the herd's drinking water. An impure water supply may be a source of infection for typhoid fever and other human diseases. For these reasons the location of the well with respect to corrals and privies is very important, in order to prevent run-off, or drainage from these places getting into the well water.

Flies are one of the most common carriers of disease and milk should be protected from them at all times. Keeping corrals clean of manure and filth will remove most of the breeding and hatching places for flies.

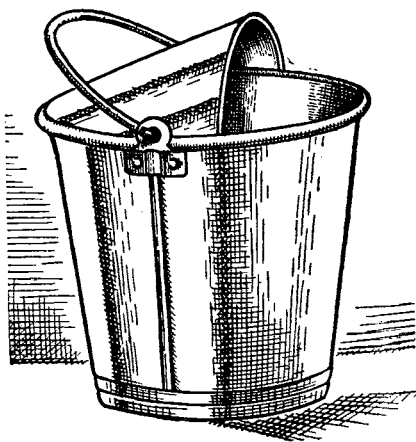
For best-flavored milk and cream, remove the cows from weedy and undesirable pastures 3 to 5 hours before milking time. Avoid feed flavors such as silage, beet tops, or beet pulp by feeding them immediately following milking.

### Keep Barns, Corrals, Cows and Utensils Clean

Dirty barns, unkempt corrals, unclean cows, and insanitary habits or methods during milking are responsible for the largest amount of extraneous matter in the milk and cream. Delayed transfer of milk to the milk house is responsible for a "cowy" barn odor which is easily and quickly taken up by the warm milk. Such milk and cream, when made into dairy products, retain the undesirable flavors.

**Practice Sanitation.**—Keep hair on the cows' udders and flanks clipped. Before each milking the cows' udders and flanks should be brushed thoroughly to free them from any particles of manure, dirt, loose hairs or dust. They should then be wiped with a damp cloth. After wiping each udder, the cloth should be rinsed in a chlorine solution and wrung almost dry before using it on another cow to prevent spread of disease. Seventy-five percent or more of the bacteria-infested dirt particles will be kept out of the milk by using the above practices.

The hooded or small-top milk pail has an opening about one-fourth as large as the open-



type pail. This helps to keep dust, dirt, or foreign matter out of the milk.

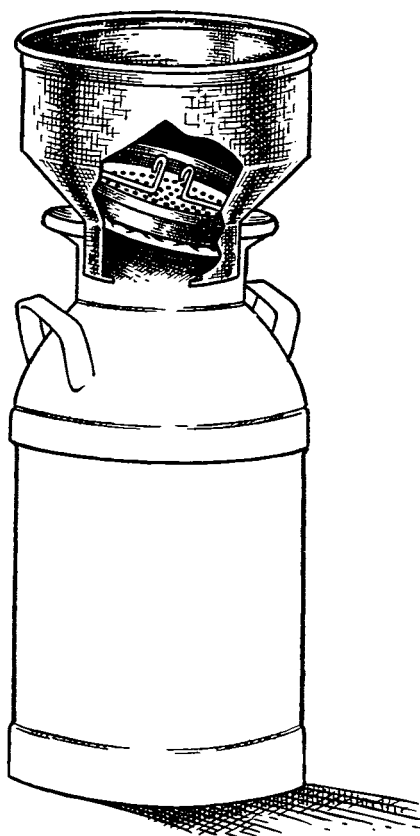
The milker's hands should be washed and thoroughly dried before milking. A clean pair of overalls should be used for the purpose of milking. Any person who has a contagious disease or who is a disease carrier should not be allowed to milk cows, work in the milk room, or handle dairy equipment.

Cotton disks are inexpensive and a fresh pad should be used for every milking. Old clothing is undesirable for strainer cloths as it is infested with bacteria. It is much easier and cleaner to keep the dirt out rather than strain it out. Milk strained through a filter-type strainer with cotton disks is cleaner than that strained through the ordinary strainer cloth.

**Clean, Sterile Utensils.**—Each and every utensil that comes in contact with the milk must be clean and sterile if clean milk is to be produced. All dairy utensils should be washed as soon as possible after using to prevent milk and dirt from drying and forming undesirable coverings and sediments. Dirty utensils, even though sterilized, always carry a large number of bacteria.

Boiling water, steam, and chemical sterilizers are the three most common methods of sterilizing equipment. Since steam is not available on many dairy farms, boiling water and chemical methods are the ones generally used.

Boiling water at the rate of 1 quart per pail and 2 quarts per can will sterilize equipment satisfactorily. Too often the water is not boiling and so is not hot enough. Chemical sterilizers, especially chlorine solutions, can be used successfully when steam and boiling water are not available. Most of the commercial chlorine solutions are satisfactory when made and used according to their directions. For sterilizing equipment after washing, use a chlorine solution containing 200 P.P.M. For rinsing equipment immediately before using, a chlorine solution containing 100 P.P.M. is sufficient. (P.P.M. is abbreviation for parts per million.)



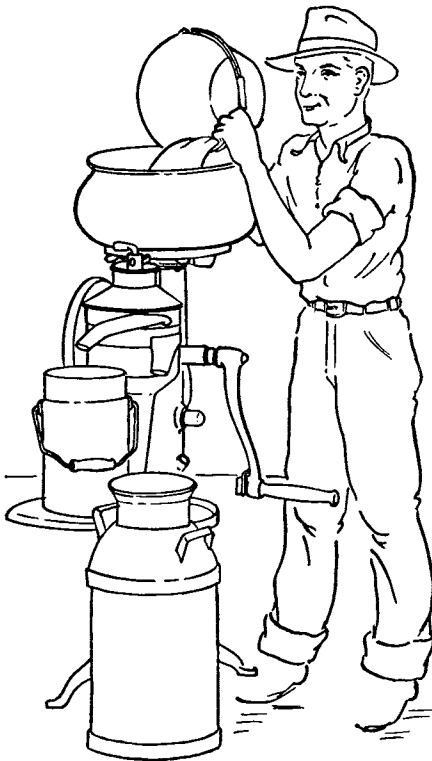
A strainer with cotton-disk filter pads.

Dirty equipment, separators, cans, milk pails, etc., give to the milk and cream a great deal of the objectionable flavors which are transmitted to the product. Every article which is used in connection with milk and cream production, storage and transportation, should be cleaned thoroughly, then sterilized to kill bacteria through the use of steam, boiling water, or a chlorine solution.

It has been found that poorly cleaned equipment increases the mold count considerably. The mold spores that are on the unsterilized equipment get into the cream and start multiplying at once.

The separator should be kept in a room free from dirt, dust, vermin, or foul odors. It should be flushed with cold water as soon as the milk has been run through, and then taken apart, and all parts thoroughly scrubbed with a brush (never a rag), using some good dairy cleansing powder and plenty of *hot* water. Avoid the use of common soap. It may cause soapy, fishy, or unclean flavors.

After cleaning the parts, scald in boiling water, and place them so they will drain and dry rapidly. Bacteria need moisture for growth, so clean, dry utensils prevent their growth.



This procedure should be followed on **all equipment** after **each and every** time it is used. In addition, just before using utensils again, a chlorine solution should be used to rinse off any dust that may have settled

on exposed surfaces. Make up a fresh rinse solution each time.

Use care in oiling separator as both cream and milk may be contaminated with excess oil.



If you are using a milking machine, follow closely the directions of the manufacturer pertaining to operation, care, and maintenance of your particular machine. It will prolong the life and maintain the efficiency of the machine.

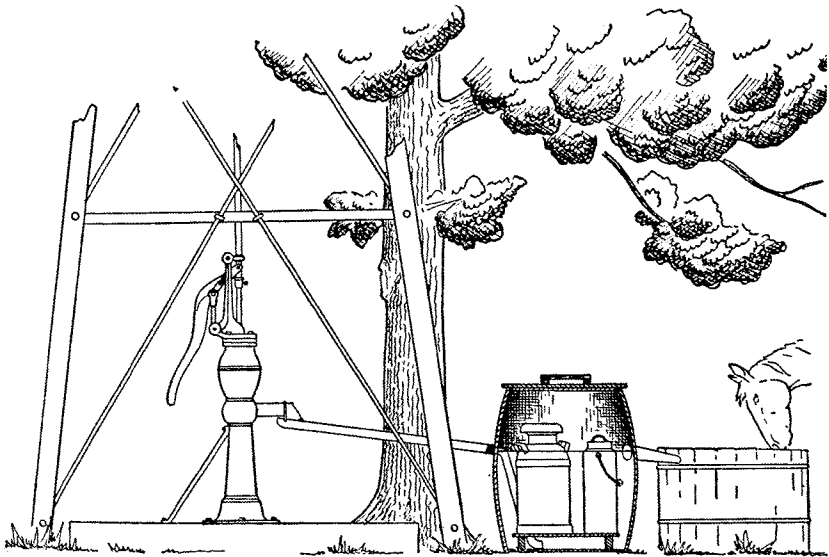
A dirty separator may cause loss of butterfat in skimmilk, undesirable flavors and odors in cream, and can lower the grade of cream to that of rejection and condemnation.

Any dairy equipment which has rough or corroded surfaces, dents, crevices, or seams which retain milk or moisture cannot be thoroughly cleaned, and harbors bacteria.

**Caution.**—Milk cans which have been used for gasoline or kerosene should *never* again be used for milk as it is impossible to get the odor out of the can.

### Handling, Cooling, and Storing

**Use Care in Handling Dairy Products.**—The principal reason for cooling milk is to check and retard the bacterial growth. Bacteria increase rapidly in a warm temperature and slowly in a cold temperature. Careful cleaning of cows and a thorough job of sterilizing utensils will reduce the bacteria count.



A simple, practical cream cooler can be constructed from a water-tight barrel. Place the barrel between the pump, windmill or water supply and the stock tank. A shaded spot is preferable. The water circulating through the barrel helps to keep the cream cool and in good condition. Place a movable platform in the bottom of the barrel, to allow circulation under the cans. The inlet pipe is turned down inside the barrel, allowing the fresh water to come in at the bottom.

Milk and cream should always be protected from contamination by foreign matter of any kind, such as dirt, insects, rats, mice, etc., when in storage.

Temperatures below 60 degrees Fahrenheit will check growth of bacteria and mold in milk, and cream in storage waiting for delivery.

Warm cream should be thoroughly cooled immediately after separation, before being added to other cream already cooled.

Milk or cream can be cooled by:

1. Running it over a tubular or cone-shaped cooler, which is connected with cold, running water.
2. By placing it in tank of cold, running water and stirring frequently until cooled.

If it is impossible to have running water through a barrel, place a burlap sack around the can of cream set in a pan of water to keep the cream cool. Keep the sack wet and place it in the shade, if possible, where there is a breeze. The evaporation of the water will help to keep the cream cool.

When electricity is available on the farm, some form of mechanical refrigeration may be used. Unquestionably, this type is by far the most efficient and satisfactory.

Protect cream from freezing in winter.

**Market Cream Every 3 or 4 Days.**—Old cream takes on a characteristic flavor—even though it is sweet—and this flavor appears after being kept for too long a period. Old cream of this kind makes second-grade butter.

Our Colorado law states: “. . . Cream which when delivered at the point of shipment is more than 3 days old during the months of May to October inclusive, or more than 4 days old during the months of November to April inclusive, . . . is hereby declared to be insanitary . . . ”

An erroneous idea exists that sour cream contains more butterfat than sweet cream. Sour cream may show a slightly higher butterfat test due to loss of weight through evaporation. The total butterfat would therefore be unchanged.

Consult your cream-station operator or milk dealer if you are in doubt as to the quality of the product you are now marketing, and he will give you helpful suggestions.

Cream should be kept cool when being delivered; also protected from dust and contamination. A wet sack may be placed around the can in hot weather.

Hauling milk or cream in the same truck with livestock, poultry, gasoline, coal oil, oil, grain, or other materials that might contaminate them is *prohibited* by the Dairy Commissioner unless they are carried in separate, closed compartments.

If these simple precautions are followed in the production and handling of milk and cream, the general quality of dairy products will be improved materially. Producers will benefit directly by marketing higher-quality products which generally command better prices.

### Summary and Conclusions

Dairy products, when produced under clean, sanitary conditions, give us some of our most delicious, nutritious, and healthful foods.

Suggested steps in the production of high-quality milk and cream are:

1. Clean, healthy cows, handled by clean, healthy individuals.
2. Clean corrals and barns.
3. Manage cows so as to avoid weedy and feed flavors in milk.
4. All utensils must be washed, cleaned, and sterilized.
5. Properly cooled and stored. Cool newly separated cream before adding to the cold cream. Store in clean, cold place below 60 degrees Fahrenheit. Protection from bad odors, dust, and freezing.
6. Deliver cream often, at least every 4 days in winter, and every 2 or 3 days in summer. Use container of a size that will be possible to fill within these time limits. There is a definite relationship between size of container, volume of cream produced, frequency of delivery, and quality.
7. Ask your cream-station operator or fieldman about the quality of your cream.

Neglect or the improper execution of any of the above-mentioned items will produce cream that will be questionable.

**Remember! Cream is a FOOD and should be produced and handled as such.**

Recent action by the Federal Pure Food and Drug Administration indicates that producers of milk and cream which are used in the manufacture of butter, cheese, ice cream, and other dairy products, are going to be forced to clean up, if they do not do it voluntarily. The voluntary method will be more satisfactory.