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Caring for Cream on the Farm

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Fig. 1.—A concrete cooling tank, thru which spring or well water is kept running, makes an ideal place for keeping cream. A metal ladle, similar to that shown, is recommended for stirring the cream.

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Caring for Cream on the Farm

By Ivan McKellip

In order that a farmer may get a good price for his cream, it is necessary that he produce and deliver an A-1 grade product. A great many factors must be considered in order to produce and deliver A-1 grade cream. The following are the most important ones.

1.—Keep clean, healthy cows.
2.—Milk in clean, sanitary quarters.
3.—Use a covered milk pail.
4.—Milk with clean, dry hands.
5.—Remove milk from barn to milk house immediately after milking.
6.—Separate milk as soon after it is drawn as possible.
7.—Cool cream immediately after it is separated.
8.—Never mix warm and cold cream.
9.—Stir the cream with a metal ladle at least three times a day.
10.—Keep cream can covered at all times.
11.—Keep cream cool, but do not allow it to freeze.
12.—Keep cream in a clean, sanitary place.
13.—Wash, scald, and dry the separator and all utensils immediately after using them.
14.—Keep all utensils and separator parts dry when not in use.

Suggestions as to the carrying out of these important points will be found in the following pages.

Keep Clean, Healthy Cows:

First of all, in order to produce an A-1 grade of cream it is essential to have clean milk. Clean milk can be produced only from clean, healthy cows. The first step to be taken to have a healthy herd is to have the cows tested at least once a year for tuberculosis. All reactors should be disposed of. In case a cow has an infected quarter or udder, and produces milk that is slimy, ropy, watery, colored, or otherwise appears abnormal, that cow should be discarded.

The entire herd should receive clean and wholesome feed and plenty of fresh water. If the watering troughs and surroundings are kept clean there is little chance of the water becoming contaminated. Feeds with strong odors or undesirable flavors should always be fed *after* milking.

The surface of the cow's body should be kept clean, as it is one of the most important sources of milk contamination. In order to avoid contamination from this source cows should be thoroly groomed before each milking to remove all dirt, loose hairs, and dust so that such matter carrying bacteria will not fall into the milk pail. The process of grooming, feeding, or bedding the cows tends to fill the air with dust and bacteria. Therefore, these operations should be done long enough before milking to give the dust plenty of time to settle.

A few minutes before milking time, the cow's udder and flanks should be wiped with a clean, damp cloth.

Milk in Clean, Sanitary Milking Quarters:

The milking quarters should be kept clean and free from undesirable odors. It is advisable to whitewash the milking quarters of the barn at least twice a year. Every morning when the barn is cleaned, sprinkle the floor and gutters with hydrate lime. This practice keeps down undesirable odors and bacteria, and the lime is an important factor in building up soil fertility on most Ohio farms. In remodeling or building new dairy or milk houses the score card, reproduced on page 11, may offer valuable suggestions if it is studied and applied.

Use a Covered Milk Pail:

In order to keep particles of dust or hair from dropping into the pail while milking, it is necessary to use a covered milk pail, such as is shown in Figure 2. If one is not used to milking in a covered pail, it will seem very awkward at first. However, by using the covered pail it is much easier to produce a cream of high quality and of a more desirable flavor than where the open pail is used.

Milk With Clean, Dry Hands:

It is important in producing a good quality of milk and cream to have a clean, sanitary milker. The clothing should be clean and, above all, the milker's hands should be clean and dry, because any particle of dirt or filth dropping from the hands while milking is very apt to go into the milk. Milking with wet hands, as is done sometimes, should never be allowed. Milk produced from wet-hand milking is always dirty and high in bacteria count.

Remove Milk from the Barn Immediately:

Milk should be taken to a cool, clean milk house that is screened and free from flies, and strained into a can or separator tank as soon as it is drawn. A barn always has an animal odor, and unless kept under the strictest sanitary conditions, has a foul odor. Milk takes on these odors very readily and for that reason alone, it should be removed immediately. In summer, flies are always more or less numerous in the barn, which is another reason why the milk should be removed to the milk house.

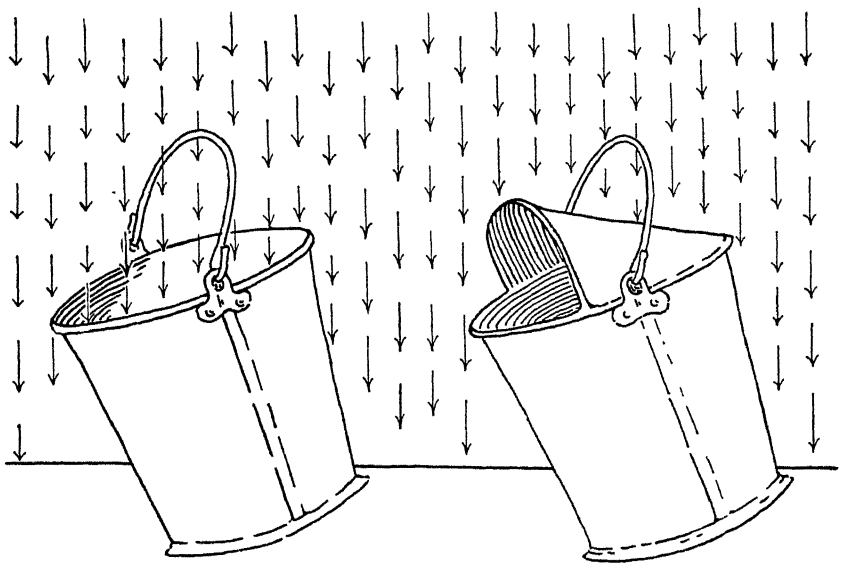

Figure 2 shows, on the right, a good type of covered milk pail. The arrows indicate how the cover keeps bacteria and dirt out of milk.

Separate Milk as Soon After it is Drawn as Possible:

As soon as possible after the milk is drawn, it should be run thru a separator. If milk stands around for some time, it gets cold and the separator does not separate it nearly so efficiently.

Even if a farmer is milking but two or three cows, he will find the centrifugal separator has many advantages over the old gravity method of separating, for gravity cream at best is of inferior quality.

In summer, the cream screw should be set to deliver cream that will test from 40 to 50 percent butterfat. During the cool season the cream screw should be set to deliver cream that will

test from 30 to 40 percent butterfat. At best, farmers often have a big variation in cream tests and they ask themselves the question, "Why do cream tests vary?" The reasons are as follows:

Reasons for Variation in Cream Tests

1.—The temperature of milk when it is separated is one reason for variation. Cold milk will produce a richer cream than warm milk of the same percentage of butterfat. Separators do not separate cold milk as efficiently as warm milk, therefore cold milk should not as a rule be separated.

2.—Variation in the speed of cream separators is another reason for varying cream tests. The faster one speeds a separator the richer the cream. But it is always advisable to run separator at the speed indicated on the crank of the machine.

3.—Another cause for cream test variation is the rate of inflow into the separator. This rate of inflow is regulated by keeping separator tank full.

4.—The percentage of fat in the whole milk also will affect the cream test. The richer the milk the richer the cream. As the percentage of fat in night and morning milkings varies, the percentage of fat in cream from the night and morning milkings will vary.

5.—Varying amounts of skimmed milk and water used for flushing the bowl also affects the percentage of fat in the cream. The more water or skimmilk used for flushing separator bowls the lower the test.

6.—When a great quantity of milk is run thru a separator often there is such a large slime deposit that it clogs or partly clogs the bowl; this causes the cream test to vary. When a separator gets in this condition the bowl should be taken down and washed.

7.—A separator bowl that is not well balanced will produce a cream that does not test uniformly. A separator bowl should always be well balanced and run smoothly.

Cool Cream Immediately After Separating:

As soon as cream is separated, it should be cooled to a temperature of 55°, or as near that temperature as possible, in order to retard bacterial growth. On the majority of farms, one can either have spring water or well water running thru the cooling tank. A cheaply constructed barrel-shaped cooling tank is shown in Figure 3. This is intended as a suggestion. A concrete tank

is shown on cover page. The cooling tank, whether it be a barrel, a wood trough, or a concrete tank, should be kept clean.

Never Mix Warm and Cold Cream:

When warm cream is mixed with cold cream, the cold cream being older naturally contains more bacteria than the fresh, warm cream. The warm cream will hasten bacterial action in the old or cold cream, for bacteria develop rapidly at a temperature of from 70° to 90°. The result will be that the cream will become sour and stale much sooner than if the different batches of cream are not mixed until they are near the same temperature.

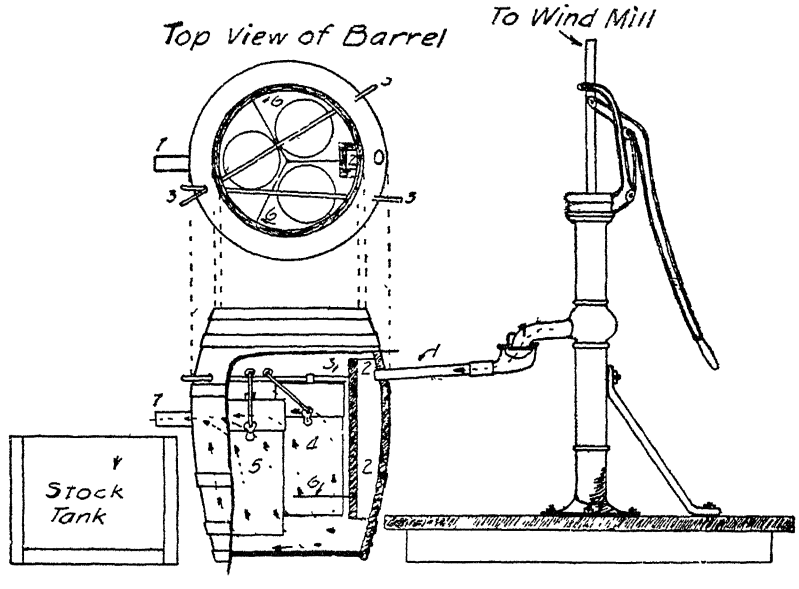

Fig. 3.—A properly constructed cooling tank—1, Inlet, usually 1½ inch pipe; 2, Wooden trough, conducting water to within 3 inches of bottom; 3, Sticks, holding can in place as shown by cut; 4, Shows position of half-filled can; run stick thru handle in cover to prevent it from sliding out from under the stick; 5, Shows position of can when filled; 6, Shows position of wire which prevents the cans from tipping; 7, Outlet, usually 2-inch threaded nipple.

Stir Cream With Metal Ladle Three Times a Day:

Cream should never be stirred with a wood ladle, for wood is porous and becomes saturated with cream. The ladle usually is hung up or laid in some corner, instead of being sterilized after using, and in a short time will be filled with bacteria and have a foul odor. When such a ladle is used, it will impregnate the cream with the same odors and bacterial growth.

Stir cream at least three times a day with a metal ladle. (Such a ladle is shown in use, in the illustration on page 1).

If cream is allowed to stand and is not stirred it becomes leathery on top and full of bunches. Stirring the cream often keeps it smooth and makes it easy to obtain a uniform sample.

Keep Cream Can Covered at all Times:

In order to keep particles of loose dirt and other foreign substances from dropping into the cream, it is necessary to keep the cream can covered. However, it is not advisable to keep it covered tightly the first twenty-four hours, for there is always a certain amount of gas and animal odor that is given off from fresh milk or fresh cream. If this gas or animal odor is not allowed to escape from the can, the cream takes on this undesirable odor.

Keep Cream Cool but do not Allow It to Freeze:

Cream should be stored at a temperature between 50° and 60° F. It should not in any case be allowed to freeze, because frozen cream becomes watery and full of bunches. With such cream it is impossible to secure a uniform sample. It may be high for one sample and low for another taken at the same time. Unless a uniform sample can be secured consistently, it is impossible to make an accurate or fair test of cream.

In the summer it is best to deliver cream every other day. When it is very hot, if one has to haul or ship the cans any great distance, they should be jacketed or covered with a wet blanket.

Keep Cream in a Clean, Sanitary Place:

A clean, sanitary milk house with a tight cooling tank is a very desirable place to keep milk on the farm. The milk house should be near the barn, yet so far from it that no barn odors can be detected in the house. It should also be on well drained land with plenty of slope. Never use a milk house for a tool shed, work shop, or farm slaughter house. The milk house should be located so that the water from the spring or well which supplies water for the stock can pass thru the cooling tank.

A milk house should have three rooms, one for the boiler, (or stove), one for the wash room where the sink, draining board, utensil rack, and can rack should be located, and one for the cooling tank and separator.

The utensil and can racks should be built next to the window so that they will be exposed to the sunshine and light the entire day (See arrangement of racks under window in Figure 4).

The cooling tank can be made of wood or of concrete, but the latter is preferable. Always have spring or well water running thru the tank. The tank should be frequently cleansed, so that it will not become slimy or take on bad odors.

A plan of an inexpensive milk house is shown in Figure 4.

Wash Utensils and Separator Immediately After Using:

All utensils and all parts of the separator over which or thru which milk passes should be thoroly washed, scalded, and placed on the utensil rack in the sun. A milking machine should be handled in like manner. The rubber parts should be placed in a

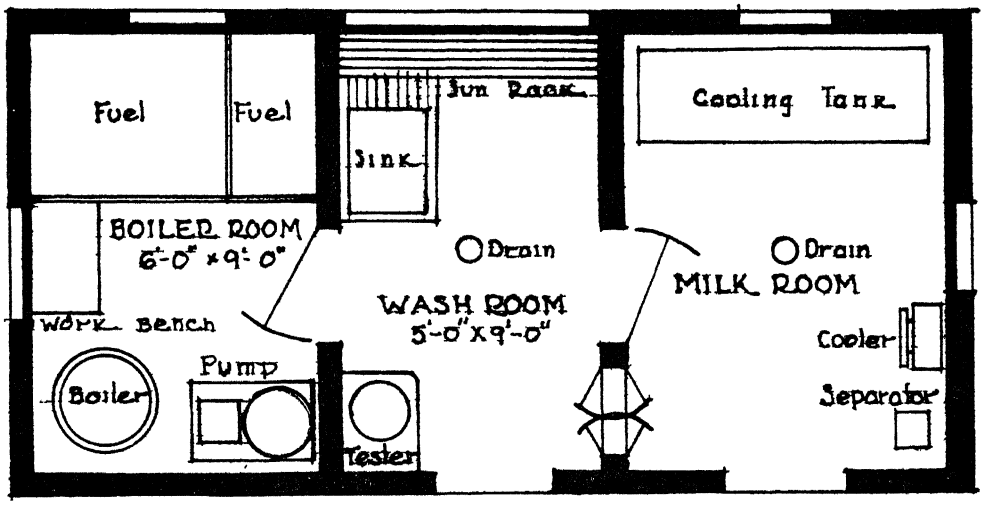

Fig. 4.—Floor plan of an inexpensive dairy house, 20 by 10 feet.

solution to prevent bacterial growth. This solution can usually be purchased from the company that handles the milking machine.

Keep Separator and Utensils Dry:

The parts of the separator that the milk touches, and all utensils, should be thoroly dried and kept dry. Most milking utensils are made of metal that will not rust but if they are kept damp, bacteria are almost sure to develop. Also, an A-1 grade of cream can seldom be produced if rusty utensils are used; therefore such utensils should be discarded.

A-1 Grade of Cream Always Desirable

First class butter can not be made from a poor quality of cream, no matter how skillful the butter maker may be. Flavor is the largest single factor in determining the price of butter.

The flavor of butter is principally the result of the flavor developed in the cream. If the cream is tainted or fermented before it reaches the creamery, the taint will follow it thruout the process of butter making, and is bound to impair the quality of the butter.

While many conditions have been mentioned upon which the quality of the cream will depend, such as the health and feed of the cow, attention to cleanliness in the stable during the operation of milking, the care of the milk after it is drawn, and the handling of the cream before it reaches the factory, yet the system of creaming will in itself greatly influence the quality of the cream. The bulk of the cream, such as is received at most creameries, seldom grades high enough to make the very best grade of butter. There is no really good reason why *all* farmers cannot produce a good quality of cream. Some farmers do produce good cream and some very poor. The poor cream should not bring as much as the good cream, and for that reason Ohio is adopting the grading system. From now on cream will be sold as Grade Number 1, Grade Number 2, and Poor.

Grade Number 1 cream must not be over four days old, test not less than 25 percent butterfat, must be clean, smooth, free from undesirable odors or flavors, and be sweet or only slightly sour.

Grade Number 2 cream is too sour to grade as First, is slightly off flavor or odor, and has a tendency to be foamy, yeasty, full of lumps, slightly stale, or too old for Grade Number 1.

Poor cream is old, mouldy, dirty, curdy, or colostrum, and has bad flavors or odors. The cream station or creamery does not want that kind of cream.

Gravity cream seldom grades A-1; it is advisable, therefore, that each farmer who produces cream should own a separator.

Dairymen who produce Grade Number 1 cream will realize about 10 cents more on each pound of butterfat than the dairymen who do not.

Factors Which Make for Profit

Besides producing a good quality of cream, there are two other factors that every farmer must watch very closely, before cream can be produced and sold at a profit.

The first factor that enters into profitable cream production is the amount of butterfat contained in the cream. Each mature cow in the herd must produce not less than 300 pounds of butterfat in a year before she is a paying investment. In order that farmers may have mature cows in their herds that will produce 300 pounds of butterfat in a year, they must supply the cows with sufficient amount of the proper kinds of feed, keep them in comfortable quarters, supply them with plenty of pure water at all times, milk them at regular intervals, and keep some kind of a record of each cow.

Each Ohio cow that produces 300 pounds of butterfat in a year, and her product handled so that it will be sold as Grade Number 1 cream, will make approximately $30 extra profit each year for her owner over cream that is handled as Grade Number 2 cream. This is surely worth while.

The next factor, and a very important one, is marketing the product. Every farmer should know the market value of his product, and in order for him to know this, he will have to watch the market quotations of 92-score butter. Besides knowing the market, he should know the amount of cream that he sells each time and if possible, know the test. If every farmer would know these three things about his own product, it would avoid many disputes, and there would be more satisfaction all around.

If a cream producers' organization can get more for cream by having the farmers pool their products, it is advisable for every cream producer to belong to, and help boost the organization.

The Score Card on the following page or a similar one is used by the city and state inspection forces, where inspection is called for. In case a farmer is selling milk or sweet cream, or expects to sell, it might be worth while to comply with this score card; also if he expects to remodel his dairy buildings, or construct any new ones, or if purchasing new dairy equipment.

SANITARY INSPECTION OF DAIRY FARMS
SCORE

EQUIPMENT	Score		METHODS	Score	
COWS			**COWS**		
Health	6	....	Clean	8	....
Apparently in good health 1			Free from visible dirt..... 6		
If tested with tuberculin within a year and no tuberculosis is found or if tested within six months and all reacting animals removed....5			**STABLE**		
If tested within a year and reacting animals are found and removed 3			Cleanliness of stable	6	....
Food clean and wholesome.....	1	....	Floor 2		
Water clean and fresh..... 1	1	....	Walls 1		
STABLES			Ceiling and ledges 1		
Location of stable.....	2	....	Mangers and partitions 1		
Well drained 1			Windows 1		
Free from contaminating surroundings 1			Stable air at milking time.....	5	...
Construction of stable.....	4	....	Freedom from dust..... 3		
Tight, sound floor and proper gutter 2			Freedom from odors 2		
Smooth, tight walls and ceiling....1			Cleanliness of bedding	1	....
Proper stall, tie and manger.....1			Barnyard	2	...
Provision for light: Four sq. ft. of glass per cow.....	4	....	Clean 1		
Three sq. ft., 3; 2 sq. ft., 2; 1 sq. ft., 1; deduct for uneven distribution			Well drained 1		
Bedding	1	....	Removal of manure daily..... (To 50 feet or more from stable.)	2	....
Ventilation	7	....	**MILK ROOM OR MILK HOUSE**		
Provision for fresh air, controllable flue system 3			Cleanliness of milk room	3	....
Windows hinged at bottom, 1.50; sliding windows, 1; other openings, .50; cubic feet of space per cow, 500 feet, 3; less than 500 feet, 2; less than 400 feet, 1; less than 300 ft., 0.			**UTENSILS AND MILKING**		
Provision for controlling temperature 1			Care and cleaning of utensils.....	8	....
UTENSILS			Thoroughly washed 2		
Construction and condition of utensils..	1	....	Sterilized in steam for 15 minutes.. 3		
Water for cleaning	1	....	Placed over steam jet or scalded with boiling water 2		
Clean, convenient and abundant.			Protected from contamination 3		
Small-top milking pail.....	5	....	Cleanliness of milking	9	....
Milk cooler	1	....	Clean, dry hands 3		
Clean milking suits	1	....	Udders washed and wiped 6		
MILK ROOM OR MILK HOUSE			Udders cleaned with moist cloth. 4; cleaned with dry cloth or brush at least 15 minutes before milking, 1		
Location free from contaminating surroundings	1	....	**HANDLING THE MILK**		
Construction of milk room.....	2	....	Cleanliness of attendants in milk room	2	....
Floor, walls and ceiling..... 1			Milk removed immediately from stable without pouring from pail	2	....
Light, ventilation, screens 1			Cooled immediately after milking each cow	2	....
Separate rooms for washing utensils and handling milk	1	....	Cooled below 50° F..... 51° to 55°, 4; 56° to 60°, 2.	5	....
Facilities for steam ..... (Hot water 0.5)	1	....	Stored below 50° F..... 51° to 55°, 2; 56° to 60°, 1.	3	....
Total	40	....	Transportation below 50° F..... 51° to 55° 1.50; 56° to 60°, 1.	2	....
			If delivered twice a day, allow perfect score for storage and transportation.		
			Total	60	....

Equipment..... + Methods..... = ...Final Score.....

NOTE 1—If any exceptionally filthy condition is found, particularly dirty utensils, the total score may be further limited.

NOTE 2—If the water is exposed to dangerous contamination, or there is evidence of the presence of a dangerous disease in animals or attendants, the score shall be "O."