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AGRICULTURAL EXPERIMENT STATION.

KANSAS STATE AGRICULTURAL COLLEGE.

OFFICE OF STATE DAIRY COMMISSIONER.

Cream Production and Grading in Kansas.

GEO. S. HINE.

Essentials in the Production of First-grade Cream.

- I. *Be sure the cows' udders and flanks are free from dirt before milkings.*
- II. *Remove all milk from the barn immediately after milking, and separate the milk at once.*
- III. *Set the separator screw so that the cream will test between 35 and 40 percent.*
- IV. *Wash, scald and air the separator and all other milk utensils immediately after using them.*
- V. *Cool the cream immediately after separating it, and never mix warm cream with cold cream.*
- VI. *Keep the milk and cream cool by placing the cans containing them in a tank of flowing water.*
- VII. *Stir all cream at least twice a day.*
- VIII. *Do not allow the cream to freeze.*
- IX. *Deliver cream as required by section 8 of the dairy law, remembering that cream not so handled is unlawful cream.*

"Cream to be used in the manufacture of butter, that is not delivered to point of shipment within twenty-four hours after milking, must contain not less than twenty-five percent of butterfat, and shall be delivered in wholesome condition."

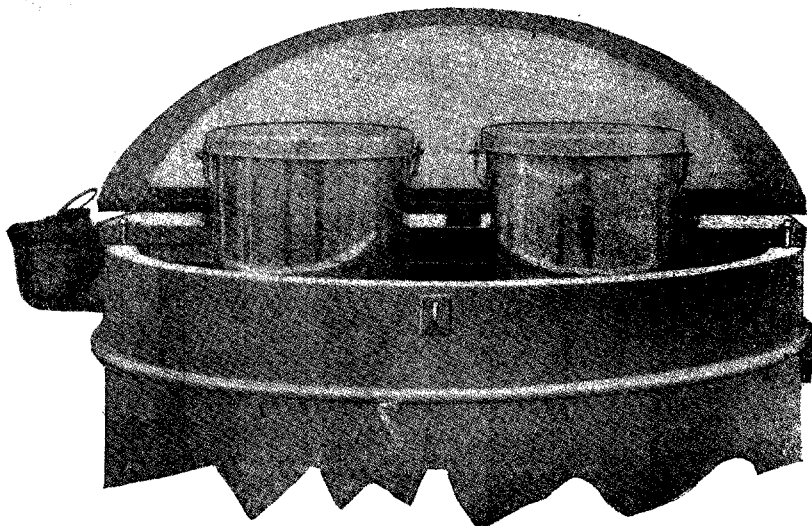
"No part of any shipment of cream to be used in the manufacture of food products shall be more than three days old when delivered to the point of shipment during the months of May to October, inclusive, and four days old during November to April, inclusive."

"Such cream must not be delivered at the point of shipment more than one hour before the schedule time of the train on which it is to be shipped, unless kept in a protected, cool and sanitary place, free from foul odors."

- X. *Keep the receptacles containing milk and cream covered with a wet blanket while delivering these products in warm weather.*

Importance of Cooling.

H. W. Conn, of Connecticut, has found that one bacterium in milk kept at a temperature of 50° F. for 24 hours will multiply to seven, while one bacterium in milk kept at a temperature of 70° F. for 24 hours multiply to seven hundred.



OFFICIAL CREAM-COOLING TANK.

TEMPERATURES OF CREAM UNDER FARM CONDITIONS.

These figures are based on 115 investigations made during July and August in Kansas:

	<i>Degrees F.</i>
Average temperature of cellar	72
Average temperature of wells and springs.....	58
Average temperature of porches and kitchens.....	90
Average temperature of cream kept in cellars or caves and on porches.....	75.7
Average temperature of cream kept in wells, water tanks and springs.....	61.7
Difference in temperature in favor of wells, water tanks and springs.....	14

Cream 24 hours old, if held at a temperature of 75.7 ° F., will be inferior in quality to cream 48 hours old if held at a temperature of 61.7° F., other conditions being similar.

Do not keep milk or cream in caves or cellars, or on porches.

Keep milk and cream in wells, water tanks and springs.

If a suitable tank, well or spring in which to keep cream is not available, the local cream-station operator should be asked to show the official cream-cooling tank. The price, including two shotgun cream cans, one divided into three compartments, is \$12. This tank is very durable, being constructed of 1⁵/₈-inch clear staves, and is large enough to hold one 8- or one 10-gallon cream can, together with two shotgun cans. One of these cans should be used for the freshly skimmed warm cream, and the other for such food products as should be kept cool. This tank has been recommended by the leading dairymen of the country. If one is not supplied with a suitable place in which to cool cream, one of these tanks should be tried.

The Advantages of Grading.

WHY FARMERS FAVOR CREAM GRADING.

Dairy farmers favor cream grading because each man is held responsible for his own dirt and carelessness. Dairymen producing first-grade cream receive a premium for the additional care and labor expended. Dairymen producing good cream do not have their cream mixed with a poorer grade.

WHY CREAMERYMEN FAVOR GRADING.

Creamerymen are enabled to pay a higher price for first-grade cream because the butter made from it brings a higher price. Creamerymen are enabled to develop and retain a better market because of the excellent quality of their butter.

WHY THE DAIRY COMMISSIONER FAVORS GRADING.

The dairy commissioner favors grading because the dairy farmers of the state receive greater returns on the investment. Higher prices for butterfat stimulate production. Grading encourages and rewards persons properly handling dairy products. It also penalizes persons handling dairy products improperly. Better quality means increased demands for Kansas butter.

Results of Grading.

Since the adoption of grading in Kansas, the producer has received one cent more per pound for first-grade cream than was formerly paid for cream regardless of quality. This resulted in the dairymen of this state receiving approximately \$300,000 more per annum for their cream through the adoption and practice of the cream-grading system.

All creamerymen and station operators must grade cream.

First-grade butterfat is worth three cents more per pound than second-grade butterfat.

The grades are established by the state dairy laws, as follows:

RULE 18. All cream shall be graded according to the following rules and each grade shall be kept in a separate can, plainly marked to indicate the grade contained therein:

(1) First-grade cream shall consist of cream that is clean, smooth, free from all undesirable odors clean to the taste, and sweet or only slightly sour.

(2) Second-grade cream shall consist of cream that is too sour to grade as first, that contains undesirable flavors odors in a moderate degree, that is foamy, yeasty, or slightly stale, or that is too old to pass as first-grade cream. All sour cream containing less than 25 percent butterfat shall be graded as second grade.

(3) Unlawful cream shall consist of cream that is very old, rancid, moldy, dirty or curdy, and such cream shall not be purchased, sold or used for food purposes.

The Prevention of Some Objectionable Flavors and Odors.

Metallic. A cream with metallic flavor is always second grade or unlawful. It is caused by cream coming in contact with rusty or poorly tinned separators, cream cans, or other utensils.

Weedy. Cream with this flavor is also second grade or unlawful. It is caused by cows eating large quantities of wild onions, ragweed, or other strongly flavored plants. It is most prevalent in early spring or during a period of short pastures. Do not turn cows into a pasture until it is well started. When first turning cows on pasture in early spring, keep them in the feedlot or stable during the night and feed some dry roughage. Take them out of pasture two hours before milking in the evening.

Oily. Oily flavor is always second grade or unlawful, and is caused by having cream near coal oil, gasoline or similar products; also by carelessness in handling separator oil, or by using cans in which any of these products have been handled.

Cheesy. Cheesy cream smells and tastes like cheese. It is caused by keeping cream at too high a temperature— at or near 90° F.—after it has come in contact with a dirty separator or any other dirty utensil. It is always second grade or unlawful.

Greasy. Greasy cream is always second grade or unlawful and has a lardy or tallowy taste. It is caused by the cream coming in contact with a dirty separator or other dirty utensil. Greasy cream is dirty cream and is invariably too old.

Bitter. Bitter cream has a taste resembling that of quinine. It is cream which has been held too long, though at a low temperature. It is always second grade or unlawful.

Colostrum. Colostrum cream is taken from milk produced by a cow on or before five days after calving. The sale of colostrum milk or cream is prohibited by the dairy and pure food laws.

Yeasty. Yeasty cream is that which has a tendency to foam and which smells yeasty. It is caused by dirty separators, by other dirty utensils, or by exposing the cream to dust or dirt, and is always second grade or unlawful. Cream develops foam only when held at a high temperature.

Stale or Musty. A stale or musty cream is always second grade or unlawful, and the terms need no explanation. Stale cream is caused by holding cream too long or in stale cans, or by using stale water in washing or rinsing the cans. Musty-cream is the result of holding cream in a cave, cellar, or room having stale or musty surroundings.

Very Sour. Very sour cream has a very high acidity, and is always second grade or unlawful. It is the result of holding cream too long and at too high a temperature.

Medium or Slightly Sour. Slightly sour or medium sour cream has a clean acid taste, and is first grade if it has a desirable odor.

Sweet Cream. Sweet cream is cream which will not curdle in hot water, tea or coffee, and is always first grade if free from objectionable odors.

Operators not grading cream in accordance with Rule 18 of the dairy law will have their permits taken up and canceled.

The blue and the red grading placards must be posted six inches above the tops of the cans containing the particular grade of cream designated by the card.

All cans must be tagged to show the grade or quality of cream contained therein.

Points the Operator Should Remember.

First-grade cream will make first-grade butter. One should be willing to drink a sample of any cream paid for as first grade. Is this test always applied? Any dairyman, before objecting to the operator's decision, when his cream is graded second, should decide whether he would be willing to drink a portion of his own cream.