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EC57-632 Good Tasting Milk

T. A. Evans

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GOOD
TASTING

MILK



EXTENSION SERVICE
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE
AND U.S. DEPARTMENT OF AGRICULTURE
COOPERATING
W. V. LAMBERT, DIRECTOR



GOOD

REASONS:

COWS: CLEAN—HEALTHY—PROPERLY FED
SURROUNDINGS: CLEAN—DRY—WELL-VENTILATED
UTENSILS: CLEAN—STERILE—SMOOTH
MILK: QUICKLY COOLED—PROTECTED

GOOD

BY T. A. EVANS¹

How do you produce good tasting milk?

COWS MUST BE HEALTHY. Milk from cows with injured or diseased udders often has an undesirable flavor. Milk these cows last to prevent infection of the rest of the herd and do not mix this milk with milk from healthy cows. Be sure the people doing the milking are in good health.

COWS MUST BE CLEAN. Any dirt that gets into milk may produce objectionable flavors.

COWS MUST BE FED RIGHT. Strong-flavored feeds must be fed after milking. Consumers will drink more milk when it has a clean, natural flavor.

COW BARN AND MILK ROOMS must be clean and well ventilated. Unclean, musty, and barny odors in milk may hide the real good flavor.

MILK UTENSILS AND EQUIPMENT must be clean and sterile. Rinse immediately after milking to remove most of the milk. Clean with a good washing compound and rinse thoroughly. Before using again, rinse with a chemical sterilizing solution made up according to directions.

MILK MUST BE COOLED QUICKLY to 40 degrees F. or lower. Slow cooling can result in the development of undesirable flavors.

MILK MUST BE PROTECTED from dust, sunlight, heat and severe cold. Good milk has a delicate flavor that must be protected from the cow to the consumer.

KEEP COWS HEALTHY

KEEP COWS CLEAN

FEED SILAGE ONLY AFTER MILKING

KEEP UTENSILS CLEAN

COOL MILK QUICKLY

Protect your milk and you protect your market.

¹ T. A. Evans is Extension Dairy Marketing Specialist at the University of Nebraska. Material in this circular was adapted from a circular published by the University of Vermont, Burlington, Vt.



FEED

Grassy-weedy-silage

REASONS:

- SUDDEN CHANGE IN PASTURE
- PRESENCE OF NOXIOUS WEEDS IN FEED
- FEEDING SILAGE BEFORE MILKING
- STORING AND THAWING SILAGE IN STABLE

FEED

MILK WILL TASTE BETTER if care is given to feeding the cows. Probably three-fourths of the complaints about milk flavors are caused by feed.

A SUDDEN CHANGE from winter feeding, or from an old pasture to a fresh, lush pasture may be detected as a strong flavor in the milk. Make such changes gradually. Take cows out of the fresh pasture two or three hours before milking.

MANY WEEDS when eaten by cows will give a strong flavor to the milk. Some of the worst offenders are wild onion and some members of the mustard family, particularly pennycress or frenchweed. It's easier to get rid of these weeds than it once was so eliminate them from pastures and hayfields whenever possible. Feed hay containing objectionable weeds to non-producing animals.

SILAGE FLAVOR is common and frequently objectionable. The feeding of any silage before milking results in an objectionable flavor. Silage fed within three hours before milking may produce a rancid-like flavor. Silage should be fed at least five hours before milking and it is much safer to feed it immediately after milking. This permits the flavor-causing materials to pass entirely through the cow's digestive system before the next milking time.

If cows even breathe the odor of silage, you will still notice the flavor in the milk. The odor is carried into the lungs and then by the blood into the milk. Don't store or thaw silage in the feed alleys in front of the cows.

Use these same precautions when feeding or storing any strong-smelling feed.

TAKE COWS OUT OF LUSH PASTURE AT LEAST THREE HOURS
BEFORE MILKING

FEED SILAGE IMMEDIATELY AFTER MILKING



BARNY

Musty

REASONS:

DIRTY STABLES
POOR VENTILATION
UNCLEAN MILKING
UNCLEAN COWS

BARNY

DIRTY AND POORLY VENTILATED milking barns often cause a barny flavor in milk. A dirty barn with an accumulation of manure has a very undesirable odor. Add to this poor ventilation and the odor becomes still more undesirable. When the cows breathe this polluted air, the odors travel by way of the lungs and the blood to the milk, resulting in an objectionable tasting milk.

DIRTY COWS AND UNCLEAN MILKING HABITS add to the strength and character of a barny flavor. Who washes a cow's teats—the milker or the milking machine? Ever notice how clean the lower part of the cow's teats are when the milking machine is removed? Are the inflations allowed to fall on the floor or hang low enough to pick up bedding or other material from the floor and carry it into the milk?

To prevent a barny flavor in milk:

KEEP MILKING BARN CLEAN AND WELL VENTILATED

KEEP COWS CLEAN

USE CLEAN MILKING PROCEDURES

MILKING BARN MUST BE DRY AND NOT DUSTY

Sprinkling lime or superphosphate on the floor helps to keep the dairy barn "sweet" and holds down dust.



SALTY

REASONS:

MASTITIS
STRIPPER COWS
INDIVIDUAL COWS

SALTY

SALTY FLAVOR HIDES the natural, slightly sweet flavor of milk. Some people definitely dislike a salty flavor in milk.

Some cows produce salty milk all the time. There's not much that can be done about these animals except cull them from the herd.

MASTITIS. Cows afflicted with mastitis frequently give salty flavored milk. In fact, one of the earliest tests for mastitis measured the degree of saltiness in the milk. The best treatment for mastitis is prevention. If cows do have mastitis some cases can be cured. The milk from cows with mastitis should not be sent to market or used as calf feed until the trouble is eliminated. Do not send milk to market from cows which you have treated for mastitis with an anti-biotic until at least three days after the last treatment.

STRIPPERS. When cows are being dried off they will frequently produce milk with a salty flavor. This is especially true if they are dried off slowly. The best way is to take the grain away from the cows and then in a few days stop milking. Cows will soon dry off with no harmful effects.

Then there are cows that do not readily conceive and, as a result, there are long periods between calvings. A cow that has been milking 10 to 12 months may start giving off-flavored milk at any time and thus should be watched carefully. If she starts producing off-flavored milk dry her off at once even though she may not be due to freshen for several months.

DO NOT SHIP OR USE MILK FROM COWS THAT HAVE MASTITIS
DRY COWS OFF QUICKLY

CHECK CLOSELY ON FLAVOR OF MILK FROM COWS THAT HAVE
MILKED LONGER THAN NORMAL



RANCID

Tainted

REASONS:

STRIPPER COWS

SLOW COOLING WITH FOAMING

RANCID

TAINTED, it has been said, means "t'aint good." Rancid, to many older folks, brings back memories of strong, rancid butter.

A rancid flavor is caused by a breakdown of the butter-fat which releases strong-flavored acids. It is one of the most objectionable flavors found in milk and makes it unfit to drink. The action is caused by the enzyme lipase which is found in all milk.

COWS WELL ADVANCED IN LACTATION give milk that is highly susceptible to rancidity. There's no way of predicting just when it will appear. Some cows have been known to produce rancid milk after only eight months' lactation; others take longer. Stripper cows will generally produce milk that will develop a rancid flavor.

VERY SLOW COOLING of milk, or cooling, warming, and cooling again, will be almost sure to develop a rancid flavor.

AGITATION that produces foaming with warm milk has been shown to produce a rancid flavor. It has been reported that pipeline milkers having risers in the line will sometimes cause this trouble. Slow cooling with agitation may start the production of a rancid flavor.

A rancid flavor takes time to develop. Although not too noticeable when the milk is first drawn, in a few hours it may be so rancid no one would drink it. During the early stages it is often called unclean.

WATCH THE MILK OF COWS LATE IN LACTATION

DRY OFF COWS AS SOON AS A RANCID FLAVOR APPEARS IN THEIR MILK

COOL MILK AS QUICKLY AS POSSIBLE

AGITATE WARM MILK AS LITTLE AS POSSIBLE



MALTY

Grapenuts

REASONS:

HIGH BACTERIA

DIRTY UTENSILS

POOR COOLING

MALTY

HIGH BACTERIA COUNT is the main cause of malty flavor. Bacteria grow and multiply rapidly in milk. Malty flavor develops when the bacterial content is very high but before the milk has had time to sour. It's definitely a sign of poor milk and it becomes worse as the milk becomes older.

The remedy, of course, is to keep bacteria out of milk as much as possible and then prevent those that are there from growing. Use the slogan "CLEAN AND COLD."

DUST AND DIRT CARRY BACTERIA. Keep cows, dairy barn and all surroundings clean so that dirt will not get into the milk. Even though you can strain the dirt out, you can't strain out the bacteria that enter the milk at the same time. They're so small they go right through the strainer pad. You should use your strainer as a measure of how well the milking was done; the cleaner the strainer pad the cleaner the job of milking you have done.

CLEAN UTENSILS AND EQUIPMENT THOROUGHLY. There are some bacteria in all milk and milk is an excellent food for bacteria. If the milk is not all removed from utensils and equipment during the washing process, bacteria will multiply rapidly. These bacteria are added to the fresh milk the next time you use the equipment.

BACTERIA DO NOT GROW WELL at low temperature. Cool milk to 36-40 degrees F. as quickly as possible after milking and keep it cold until it reaches the consumer.

KEEP SURROUNDINGS CLEAN

KEEP UTENSILS CLEAN

KEEP DIRT OUT OF MILK

COOL MILK QUICKLY

KEEP MILK COLD



HIGH ACID

Sour

REASONS:

VERY HIGH BACTERIA

DIRTY UTENSILS

POOR COOLING

HIGH ACID

VERY HIGH BACTERIA COUNT. In these days of mechanical refrigeration there is little reason for sour milk. Yet it does happen from time to time. The cause is large numbers of bacteria.

BACTERIA NEED THREE THINGS in order to grow and multiply—food, moisture and the right temperature. Eliminate any one of these and they cannot thrive. Milk provides the first two. The bacteria that cause milk to sour feed on the lactose or milk sugar. It's a perfect food for them. The only control is temperature. The ideal temperature for this type of bacteria is 72 degrees F. They will grow at temperatures a little higher than this and also at temperatures as low as 50 degrees F., although at a slower rate. Another group of bacteria will grow slowly at temperatures between 40 and 50 degrees F. This group causes changes in the milk which are just as bad as souring.

MILK IN THE MILKER PAIL IS ABOUT 90 degrees F. It must be cooled to below 40 degrees F. before growth of bacteria is halted. The temperatures between 90 and 40 degrees are growing temperatures for these bacteria. At the most favorable growing temperatures the number of bacteria will double every 20 minutes. To stop the bacteria from growing the temperature must be reduced to below 60 degrees F. within 20 minutes from the time the milk is drawn. As bacteria grow more slowly at the lower temperatures, speed is not so important from 60 degrees to 40 degrees. At the beginning of the cooling speed is absolutely essential if you are to produce milk with a low bacteria count.

COOL MILK QUICKLY TO 40 DEGREES F. OR LOWER

KEEP COLD



OXIDIZED

Cardboard

REASONS:

EXPOSED COPPER OR IRON IN EQUIPMENT

DAYLIGHT

INDIVIDUAL COWS

OXIDIZED

IF YOU WANT TO KNOW what oxidized milk tastes like, just chew a piece of cardboard. Oxidized flavor occurs most frequently during the winter months after cows have been on dry feed for some time.

There are three different types of this flavor, each having a different cause.

COPPER OR IRON. Milk coming in contact with bare copper or iron will pick up small particles of these metals which in turn can cause oxidized flavor to develop. One ounce of copper can cause oxidized flavor in 62,500 pounds of milk. The use of metals other than copper will avoid this trouble. Milk utensils and equipment made from stainless steel or other non-corrodible materials are rapidly doing away with this source of oxidized flavor. Milk cans made of tinned iron should be retinned as soon as rust spots appear.

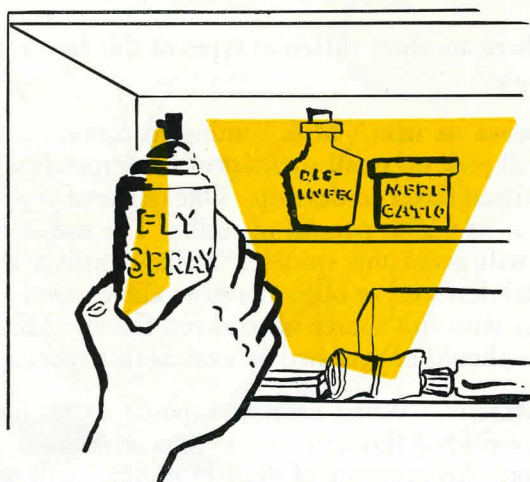
DAYLIGHT. When milk is exposed to sunlight, or even just daylight, oxidized flavor is sure to appear. This is often called daylight flavor. An exposure of even 15 minutes will often develop an oxidized flavor. Therefore, keep milk away from light as much as possible.

CERTAIN COWS PRODUCE OXIDIZED MILK. In some cases the milk is oxidized when drawn, in others it takes some time to develop. Research is going on in many places to find the reason for this. In the meantime make sure that neither of the first two causes mentioned are present and you will reduce the possibility of this flavor.

USE UTENSILS AND EQUIPMENT MADE OF STAINLESS STEEL OR
OTHER NON-CORROSIVE MATERIAL

KEEP CANS WELL TINNED

KEEP MILK AWAY FROM LIGHT



UNNATURAL

Medicinal or disinfectant

REASONS:

MEDICATION OF TEATS

DISINFECTANT BARN SPRAYS

SOME FLY SPRAYS

UNNATURAL

CONSUMERS SOMETIMES COMPLAIN about medicinal or disinfectant flavors in milk. Something that produces the flavor gets into the milk at the farm.

SOME MEDICATIONS used for sore, injured or cracked teats have strong, pungent odors. By carelessly treating one teat you can flavor a large quantity of milk. For cracked and sore teats there are many tasteless and odorless products on the market. Plain colorless petroleum jelly is as effective as any. If a teat is badly injured consult a veterinarian. It is usually best to discard the milk from each teat until it is healed.

MOST DISINFECTANT SPRAYS have a creosote base. This has the same odor as the familiar hospital disinfectant. It is a potent source of flavor in milk. When using a disinfectant avoid getting it on forage and put as little as possible on mangers.

INSECT SPRAYS also may cause trouble. Most of them have some odor which can flavor the milk. Do not use these sprays immediately before or during milking.

Some forage-insect control sprays leave residue on the forage that will flavor milk when consumed by the cows. Little is known about this at present but don't overlook it as a source of trouble.

USE TASTELESS AND ODORLESS MEDICATIONS ON TEATS

USE SPRAYS THAT HAVE LITTLE OR NO ODOR

DO NOT USE FLY SPRAYS JUST BEFORE OR DURING MILKING