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Producing Good Flavored Milk

J. O. Young, Extension Dairyman

Most people like the naturally clean, pleasant and slightly sweet flavor of milk. When "off flavors" occur in milk, consumption declines. Many people are very sensitive to these slight off-flavors. Some of these flavor defects can only be controlled by producers while processors must be responsible for the prevention of others.

Flavor defects that can occur in the production of milk are not difficult to control under normal conditions. There are times when certain routines need to be altered but in general good management practices result in the production of good flavored milk.

Feed Flavors

Feed flavors are the most common defect of raw milk. Any strong flavored feed will generally cause milk to contain the flavor of that feed. Wild onion and wild garlic cause a very undesirable milk flavor in some parts of Indiana. Cows must be removed from pastures containing these weeds from two to four hours prior to milking in order to prevent onion flavors in the milk.

During winter feeding, silage and alfalfa hay can cause undesirable feed flavors. These feeds should never be fed prior to milking. By feeding them immediately after milking they normally are consumed early enough before the next milking so that the flavor does not come through in the milk. It is preferable to never feed silage in the milking area. The strong odor of silage can be breathed in by the cow and the flavor will appear in the milk in only a few minutes.

If silage is fed in the milking barn it should be fed after milking and the barn should be well ventilated before the next milking. Where automatic feeding of silage is practiced it may be necessary to fence the cows off from the silage at least two hours prior to milking time. Grain concentrates are the only feeds that should be fed immediately before or during milking.

Grassy flavors in the spring are a common irritant to many consumers. Gradually introducing cows to pasture prevents a sudden change of flavor and permits the cow to adjust more gradually to the drastic change in feed.

Best results are obtained by putting the cows on pasture for approximately 30 minutes the first day immediately after the morning milking. Time on pasture should be increased gradually each day for about two weeks. Cows should then be removed from pasture two hours before the evening milking. This practice not only improves flavor of milk but helps production slumps.

Cows will normally show an increased production when first put on pasture even when left there the full time between milkings. But after a few weeks production may
slump because animals are not receiving enough energy. Spring grass is high in moisture and the cows will fill up on grass and have no room left for high energy feeds. By gradually shifting into the pastures they will have enough room left for concentrates and production can be retained at a high level.

Cows removed from pasture two hours before milking will also eat grain concentrates more rapidly in milking parlor and permit a higher energy intake.

Rancid Flavors

Rancidity is very distasteful to most consumers even though they may not recognize exactly what the flavor is. In the early stages of development, rancidity will taste unclean or barny. As the flavor progresses it becomes strong and bitter. The flavor progresses in intensity until the milk is pasteurized.

Rancidity is caused by a milk enzyme known as lipase which attacks the milk fat. The milk fat is normally protected from the lipase unless the protective membrane around the fat droplet is disrupted by excessive agitation or by warming and cooling milk. Any excessive agitation of milk may cause rancidity.

If foaming occurs it generally means that the milk has been agitated too much. Excessive agitation may be caused by air leaks, by slow milking or too much air intake to move milk through milk lines, by risers in the milk line, by milk pumps running when there is not a continuous flow of milk or by too much agitation by bulk tank agitators, particularly when the milk is still warm.

Most dairy plant fieldmen are well aware of situations that can cause rancidity and can be most helpful in solving rancid milk problems.

Foreign Flavors

Medicines used on udders, unripened cleaning compounds, excessive sanitizing chemicals and pesticides can cause foreign or medicinal flavors in milk. Udder medications should be applied after milking and the udder should be well washed before the next milking. Phenol-based medicants create many of the medicinal flavor problems.

When cows breathe odors from gasoline, creosote, kerosene, fresh paint or similar materials, the flavor of these compounds will be present in the milk in a matter of minutes. Such substances should be stored away from barns and milking areas.

Barny Flavor

When cows breathe stale "barny" air, the milk contains the same odor and an unpleasant flavor. Good barn ventilation is a necessity for good milk and is also important for cow comfort and health.

Cowy Flavor

A "sweetish" or "cowy" flavor is generally present in milk from cows with Ketosis (Acetonemia). Such milk should not be shipped to a processor.

Flavors Caused by Bacteria

High acid (sour) or malty milks are very objectionable. They result from high bacteria counts. High bacteria counts result from (1) unclean equipment (2) poor milking practices (dirty udders and improper handling of machines) or (3) improper cooling. Bacteria grow rapidly at warm temperatures but not at 40°F. or cooler.

"Unclean" or bitter flavors can also result from high bacteria counts.