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Dairy Guidelines

COOPERATIVE EXTENSION SERVICE, V.P.I., BLACKSBURG, VIRGINIA

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Controlling Off-Flavors in Raw Milk

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It pays a dairyman to be mindful of various causes and control of off-flavors in milk. Constant attention to details of herd grazing, feeding, herd management, and sanitation can prevent considerable losses that are most certain to follow when ill-flavored milk is produced and marketed.

The most recent study of fluid milk products sales shows that Virginians are consuming about $\frac{1}{2}$ pint milk-equivalent per person per day. This amount falls far short of the recommended daily allowances of 3 to 4 glasses per day for children and 2 to 3 glasses per day for adults.

Although poor flavor in milk is perhaps not the primary reason for this low consumption rate, it can contribute considerable adverse effect. Consumers, when evaluating the quality of milk, are limited to the 3 senses of sight, taste, and smell. By sight the consumer sees the package and eventually its contents which are nearly always acceptable. Smell and taste, then, are the most effective senses that the consumers can use to judge quality in milk.

When milk has an off-flavor or odor, usually consumers will do one of 2 things. They will either cease to drink milk, or they will change their source or brand of milk. A poor flavored milk can also affect sales of other dairy products by a particular plant. Consumers tend to judge the quality of all the plant's products by the taste of any one product they happen to purchase.

Adoption of bulk handling methods have created more problems. Instead of one or two 10-gallon cans of milk being rejected, 1 or 2 whole day's production of a herd, or even a whole tank truck of milk, may be rejected because of an off-flavor.

Milk haulers and dairy plants attempt to screen out all but the best flavored milk, but this is sometimes difficult and not always effective. Most plants operate expensive processing equipment called "Flavor Standardizers" to assist in marketing a uniformly good-flavored milk at all times. Flavor standardizers, however, are not capable of removing strong off-flavors from milk. Control of most off-flavors common to milk is still the responsibility of the dairy farmer.

Flavor in milk is a result of a combination of sensations of taste and smell. Milk, of good flavor, has a mild, bland, slightly sweet taste. Beyond this, any other flavor, even the slightest, would indicate the presence of off-flavors.

The following chart should be helpful to dairymen in eliminating many off-flavors common to raw milk.

Off-Flavor	Possible Causes	Suggested Preventive Measures
Feed	Silage--eating or breathing Pasture or alfalfa hay Distillers or brewers grains Vegetables--cabbages, turnips, etc.	Withhold objectionable feed or remove cows from pasture 4 hours prior to milking. Feed silage <u>after</u> milking rather than just <u>before</u> milking. Keep old silage removed from mangers and feeding bunks and store carts of silage outside of milking barn. Provide for proper ventilation, where necessary.
Weed	Wild onion or garlic. Others: ragweed, bitterweed, honeysuckle, skunk cabbage, mustard, dog fennel.	Renovate pastures when possible. Eradicate weeds through a well-planned program of spraying*. Clip pastures or allow only dry cows and heifers to graze. Remove milking herd from infested pastures 4 to 7 hours prior to milking and feed cows good quality hay.
Cowy, Barny, or Unclean	Dirty cows	Clip cows, and clean them regularly.
	Rank air in housing and milking areas	Maintain clean environment and ventilate where necessary.
	Dirty milking equipment	Clean and sanitize all milking equipment twice daily.
	Unclean cloths or sponges for washing udders	Clean and sanitize them between milkings or use single-service paper towels.
	Ketosis	Manage dry cows properly*. Withhold milk from affected cow.
Salty	Mastitis	Remove infected cows from milking herd--discard milk. Milk disease-free cows properly.
	Late lactation cows	Discard milk from late lactation cows.

*Consult with Extension Agent, Agriculture

Off-Flavor	Possible Causes	Suggested Preventive Measures
Rancid, Bitter	Excessive agitation or air admission in pipeline milking systems.	Eliminate risers in pipelines, keep fittings tight and air admission at the claw to a minimum; don't run milk pumps in starved condition.
	Cooling too rapidly or to too low a temperature.	Cool milk to below 40°F. within 2 hours after milking and hold; avoid extremely low temperatures. Do not freeze milk.
	Late lactation cows	Discard milk from low producing or late lactation cows.
Flat	Low fat and solids	Cull these cows from the herd.
Oxidized	Copper-bearing metals, rust	Use only stainless steel, glass, plastic or rubber for milk contact surfaces.
	Dry lot or winter feeding conditions	Provide green feed such as green chop or silage.
	Sunlight	Keep milk covered.
Malty or High Acid	Dirty milking equipment	Properly clean and sanitize all milking equipment.
	Slow or inadequate cooling	Cool milk quickly to temperatures below 40°F. within 2 hours after milking and hold.
Unnatural	Medications, insecticides or disinfectants	Use colorless and odorless medications when possible. Use all materials according to directions.
	Certain sanitizing agents	Prevent introduction of sanitizing solutions to milk. Drain all equipment well.

