

Dairy Pipeline

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Water — That Other Essential Nutrient

Water is one of five essential nutrients cows need, and the one that is needed in largest quantity. The other essential nutrients are energy, protein, vitamins and minerals.

Cows can be very sensitive to poor quality water, particularly young calves and productive cows. Cows will also succumb faster to the lack of water than the lack of any other nutrient.

Why are cows so sensitive to water quality? Let's explore a few possibilities.

One reason is, water is such a large portion of a cow's diet. For example, a cow consumes about half a gallon of water for every pound of milk she produces. For a productive cow, that is about 30 to 50 gallons of water per day!

On the other end of the spectrum is a young calf. It's ration consists almost entirely of water, especially if it is fed a reconstituted milk replacer.

Another reason for a cow's sensitivity to poor quality water — as well as to poor quality feeds and to poor feeding practices — is her great dependence upon a normal fermentation in the rumen.

To sustain high levels of production this delicate fermentation must perform at near

peak efficiency — 24 hours a day. That requires good quality feed, good quality water, and good feeding practices. To accomplish this, we expend a lot of money and effort testing and weighing feeds; we ought to be doing the same with water.

Water Consumption

If cows don't consume enough water, feed intake declines. Consequently, production and reproduction will suffer. Poor quality water can put a lid on how much your herd is able to produce.

Reduced dry matter intake, lower production, stiff bowels, cows lapping at water, or cows' preference for some supply of water over another may be clues that cows are not consuming adequate amounts of water.

One sure way of measuring water consumption is to install a water meter on the line to the stable. It's a gadget every good dairyman should have. As you compare and evaluate daily readings, remember that water intake will be influenced by climatic conditions, moisture content of the feed, body size and production levels.

A number of other factors also affect water consumption. The supply of water at the source (ie. well or spring) is of primary concern. Perhaps the supply is

adequate, but pump capacity, water pressure, pipe sizing, or drinking space may be inadequate for the size of your herd. Or, maybe the drinking facilities are not enticing or easily accessible to the herd.

Could it be that stray voltage is a deterrent to consumption?

Temperature also affects water intake. The warmer the water, or the warmer the day, the more water cows will drink. That's why some dairymen pipe warm water from their heat reclaimers and heat exchangers into the watering tank. Some well water is cooler than usual and appears to discourage intake.

However, cows benefit from cooler water on hot days; it helps to reduce body temperature and respiration rate, and encourages greater day matter intake.

Consumption is also affected by water quality. For example, acid water corrodes pipes and can impart a metallic off-flavor to water. High contents of iron, sulfates and other contaminants may also cause off-flavor problems.

The pH of the water may alter the pH in the rumen and thus impair normal fermentation. This delicate fermentation process in the rumen might also be upset by other contaminants in water such as bacteria and toxic elements.

High levels of minerals and certain other ingredients in water may tie up minerals in the ration and interfere with mineral absorption, thus affecting the animal's health and production. This is only one example of the complex interactions that can occur between ingredients in the feed and water.

Finding The Cause

If you suspect a problem with water intake or water quality, how do you track down the cause?

Before spending a lot of money on water testing or on water treatment systems, rule out some of the other factors that might be contributing to reduced consumption or to the herd's poor general performance. Some of these possibilities were discussed in the preceding paragraphs.

To check water quality, start with a few simple tests. Check the system for stray voltage. Taste the water for off-flavors. Look for buildups of stain, scale or slime.

Submit samples of water for laboratory analysis. A basic group of tests to ask for might be: pH, total bacteria, total coliform and nitrates. Other tests to consider are iron, sulfates and hardness.

Hardness does not have much effect on cows, but does affect how well your milking equipment cleaners work. These tests could be run during different seasons of the year or during different rainfall situations. Numerous other tests are also available.

Once you get a report back, how do you interpret the results? Usually, the laboratory will indicate if the water meets EPA's standard for human consumption.

What about its suitability for animal consumption? Those standards are difficult to find and disagreements exist as to what standards are acceptable.

The standards for human consumption are probably good guidelines to use for water consumed by very young animals. However, cattle with a fully developed digestive system and a functional rumen can tolerate poorer quality water, but the sensitivity of cattle to poor quality

water appears to vary from cow to cow and from farm to farm.

A lot of this perceived variation may be related to differences in feed quality and feeding practices from farm to farm. As discussed earlier, the amount of water cows consume is also a factor.

Thus, high producing cows, consuming lots of water, will probably be more sensitive than lower producing cows on low producing herds.

As you compare test results with published acceptable standards, ask yourself, "upon what are the standards based?" Do the standards indicate the levels that are life threatening, or do they indicate levels that might start affecting water consumption, digestion, production, etc? And, is it based upon cows in high production or low production, and upon cows fed a "safe" ration or upon cows whose rations are "stretched to the limit?"

There's a big difference between these criteria and conditions.

If you are interested in maintaining excellent herd health, peak dry matter intakes and peak production, water quality standards acceptable to you might be considerably less than what you sometimes see published.

In my next column, I will be focusing on preventing and correcting water quality problems.

SCS To Provide Farm Bill Information At Farm Show

HARRISBURG — Farmers visiting the 1987 Pennsylvania Farm Show will be able to get the latest information on the conservation provisions of the 1985 Farm Bill. The USDA Soil Conservation Service exhibit will be a farm bill information booth.

Compliance with the conservation provisions of the farm bill will determine if farmers can receive help from other USDA programs such as commodity price supports, FmHA loans, crop insurance and disaster payments. According to Frederick Bubb, SCS, the conservation provisions are better known as sod buster, swampbuster, conservation compliance and conservation reserve program.

Sod buster regulations are in effect now, stated Bubb. This affects those plowing long term or

permanent sod.

Conservation compliance will affect all farmers who farm class III, IV and VI land as well as some of the Class II land. These classes of land are termed 'highly erodible' and require a conservation plan approved by the local conservation district by January 1, 1990. Practices in the plan must be applied by the beginning of 1995 to maintain USDA program eligibility.

"We know there is a general lack of understanding by farmers of the farm bill conservation provisions, so we decided an information booth at the farm show would be helpful to farmers," said Bubb.

Farmers wanting information before the farm show contact the Soil Conservation Service, Agricultural Stabilization and Conservation Service or conservation district office.

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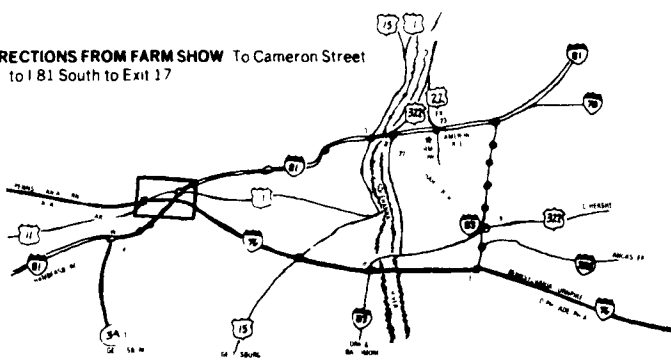
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