



Dairy Briefs

The Latest Information
on Dairy Cattle Nutrition



Water: The Forgotten Nutrient

Laura Martin, M.Sc

Water is the most important nutrient for dairy cows; however, water quantity and quality are often overlooked when it comes to routine maintenance. High producing dairy cows require more water per kg of body weight than any other land mammal. When quantity or quality of available water is poor, production and health can suffer.

Water consumption in dairy cattle is influenced by a lot of factors: milk production, dry matter intake, activity level, environment (i.e. temperature), diet composition and water quality. Total water intake for lactating cows is 4 – 4.5 kg per kg of 4% FCM produced. The majority of water consumption (70-97%) comes from drinking water, with most of the remainder coming from water present in feeds. Even though some water is provided in feed it really doesn't impact drinking water consumption unless the ration is very wet (>70% moisture) and



then drinking water intakes will decline rapidly. For the average cow that means that for every kg of milk she produces she needs to drink 3 L of water.

Most cows prefer to do the majority of their drinking after exiting the milking parlour. Cows will consume as much as 50 –

60% of their daily water intake after milking, if given the chance. It is a good idea to have 1 – 2 ft of trough space per cow in the return alley from the parlour so that there is room for the cows to drink as they exit the parlour. For the rest of the barn, water troughs should provide 3 – 4 inches perimeter length per cow. As cows are designed to lower their heads to eat and drink, troughs ideally should be about 2 ft from the floor.

Cont. >>

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Dairy cows prefer to drink warm water unless it is very hot outside. Water recycled from the parlour's plate cooler can be a great source of warmed water provided that the supply available is enough to keep a minimum of 3 inches in the bottom of the trough and is clean. Water troughs should be cleaned (emptied and scrubbed) on a regular basis, preferably daily but at minimum weekly. If you wouldn't drink the water out of the trough don't expect your cows to drink it either.

While dirty troughs can cause water quality to decline there are other aspects of water quality that should also be considered when it comes to drinking water. Odour and taste are the easiest things to check on farm. If it smells (rotten eggs, fecal matter) or if it has an off taste (salty, metallic) then cows will probably reduce their intakes. It is also a good idea to periodically test water for the presence of minerals, compounds and bacterial contamination. Most water test results come with a legend of acceptable values for livestock water but there are few to keep a close eye on.

High iron in water is probably the most frequently reported problem when it comes to drinking water. Concentrations greater than 0.3 ppm in drinking water can cause problems for dairy cows. High iron may cause a metallic off-taste to the water, reducing intakes. Also iron-loving microbes can form slimes in pipes and troughs reducing water flow. The iron found in water is much more available to animals than the iron found in feeds. Water-soluble iron bypasses the regulatory checks that help prevent iron toxicity in animals. Iron toxicity can reduce immune function, increase retained placentas and mastitis, cause diarrhea and decrease growth in heifers.

Sulfate is a biologically active anion that in high enough levels can reduce water intakes and milk production. Sulfate especially affects fresh cows and can reduce feed intakes and increase displaced abomasums and retained placentas. The concentration in drinking water should not exceed 1000 ppm.



Nitrates are as much a concern in water as they are in feeds. Nitrates can contaminate water sources through surface runoff from crops or pastures. High nitrate levels, over 20 ppm for nitrate-nitrogen, can have a negative impact on reproduction. Nitrates in feeds and water are additive, so care should be taken if feeding high nitrate feeds that the water supply will not compound the issue.

Microorganisms in the water supply are also a concern. For outside holding ponds, summertime algae blooms are a concern as they can cause anorexia and diarrhea in animals that consume the contaminated water. Fecal organisms, like E. Coli, are mostly found in fouled water rather than in the water source itself. Proper sanitation of water troughs and drinkers can greatly reduce this problem. Build up of bacteria in holding tanks can also be reduced with a regular cleaning and maintenance schedule.

Solutions for water filtration can be expensive or are not practical on a farm scale. If the problem is chronic within the water supply, this may be the only option to provide safe drinking water for the



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microbiSTART® can be used to get fresh cows back on feeds smoothly with minimal problems. Research has shown that cows that recover quickly are bound to have less metabolic problems such as milk fever and related disorders. It should be fed immediately after calving and may be continued for up to two weeks, depending on the cows' condition.

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- Stimulates fibre-digesting bacteria by providing nutrients for these rumen bacteria.
- Provides potassium for maximum activity of the rumen microbes.
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- Provides the buffering capacity required for maximum activity of the rumen bacteria.
- Promotes dry matter intake and increases ration digestibility.
- Increases energy balance in early lactation cows.
- reduces excessive weight loss during early lactation.

herd. Chlorination of water followed by an Activated Carbon Filter (ACF) is an effective method to cover most problems on farm. The chlorination kills microorganisms and reduces off odours and colours while the ACF captures minerals, metals, pesticides and other undesirable compounds. While chlorination of the water source is recommended, using chloride tablets in water troughs is not. This can cause spikes in chlorine that may impact water intake.

This often overlooked nutrient has many functions in the dairy cow, the most noticeable one being its role in creating a saleable product – milk. Milk is 87% water and if intakes are limited milk production will also be limited. Access to clean, plentiful water should be available to the whole herd to ensure that every cow's production is optimized.



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