

Water Quality Impacts Livestock Health and Weight Gains

Water is essential for livestock production and research has shown that water quality can affect livestock performance. Studies show that livestock with access to clean water are healthier, will drink and eat more, and ultimately gain weight quicker. Factors that reduce water quality are: sulphates; total dissolved solids; bacteria, viruses, and parasites; algae; nitrates; taste and odor; and temperature.

Sulphates and Total Dissolved Solids (TDS)

There are remedial and preventative strategies to address most of these issues. However, if sulphate levels and total dissolved solids exceed recommended levels the best course of action is to find a new water source.

Water with TDS higher than 5,000mg/L should not be used for lactating or pregnant cows. Most animals will reduce intake at this level. Water with TDS greater than 7,000mg/L is unsuitable for cattle. Canadian Water Quality Guidelines recommend a maximum sulphate concentration of 1,000mg/L [1].

Bacteria, viruses, and parasites

One of the biggest contributors to poor water quality is manure. When livestock have direct access to a pond for drinking water they often defecate in the water. Observational research has shown that cattle will defecate 25% of the time that they are drinking water, and this adds up to a lot of manure entering the pond [1]. Bacteria, viruses, and parasites can be passed on through manure in the water, which can lead to spread of disease among a herd.

Blue Green Algae

Warm water conditions and abundant nutrients from manure can increase plant and algae growth, including blue green algae. Blue green algae is a toxic cyanobacteria that can cause death in mammals almost instantly. The best way to avoid issues with blue-green algae is to prevent algal blooms in the first place.

Blooms can be reduced by limiting nutrients entering the water source and by increasing oxygen levels with aeration. Koenders windmill aeration systems effectively diffuse oxygen into the water from the bottom up. More on this here: <http://www.naturespondcare.com/education/a-proven-natural-solution-to-solve-blue-green-algae-problems-once-and-for-all.html>

Taste, Odor and Temperature

Cattle can be sensitive to taste and odor of water. When given the choice between dirty and clean water, research has shown that they prefer clean. Consumption of water actually drops when levels of manure reaches 0.25% in the water [2]. Cool water also helps livestock maintain a proper body temperature and can increase water intake, in turn increasing weight gains.

Water Quality and Weight Gain

Research shows that livestock with access to clean water drink more, spend more time grazing or feeding, and less time resting, resulting in more weight gain and improvement in overall health, which leads to lower vet and medical bills. Studies show that young cattle drinking clean water will gain 23% more weight than those drinking poor quality water [2]. A further study, conducted over 5 years

compares weight gain in cattle drinking from different water sources and results show that water treated with aeration yields the greatest weight gain, at 1.06kg/day [1].

Average daily weight gain (kilograms/day) over five years with different water treatments [1]

Treatment	Average over 5 years
Direct	0.97
Pumped	1
Coagulated	1.05
Aerated	1.06
Well Water	N/A

Best Practices for Livestock

Watering

The best thing you can do for your livestock is to deny direct access to the water source and pump clean water into troughs for drinking. By denying direct access, you eliminate most manure entering the water, which will increase the water quality drastically. To ensure the water stays clean and free from other contaminants, employ Nature's Pond 3 Step Program by installing windmill aeration, treating with Nature's Pond Conditioner, and removing unwanted vegetation with the Cutter N' Rake. Once the water source is clean you can use a Koender's Solar Powered Water Pump to pump water from the pond into water troughs. Only pump water when needed to ensure it doesn't heat up and become stagnant in the troughs, and keep the troughs clean to ensure water quality remains good for drinking. For more information on water quality management an Nature's Pond Care's 3 Step Program visit www.naturespondcare.com

References:

1. Water quality impacts on livestock. (2015). Agriculture and Agri Food Canada. Retrieved from: <http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/water/livestock-watering/water-quality-impacts-on-livestock/?id=1370621201553#a2>
2. Willms, W. Kenzie, O. McAllister, T. Colwell, D. Viera, D. Wilmshurst, ... T. Olson, M. (2002). Effects of water quality on cattle performance. Journal of Range Management. 55. 452-260. Retrieved from: [http://www1.foragebeef.ca/\\$foragebeef/frgebeef.nsf/all/ccf22/\\$FILE/waterqualityeffects.pdf](http://www1.foragebeef.ca/$foragebeef/frgebeef.nsf/all/ccf22/$FILE/waterqualityeffects.pdf)

Koenders Water Solutions Inc. was founded in 1988 – manufacturer of only environmentally friendly and sustainable pond care products and the innovator of windmill aeration systems and pond conditioners. Nature's Pond Care program is an all natural 3 Step Pond Care Program than can be implemented as an alternative, or in conjunction with, herbicide and algicide treatments.

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