



Ridin' Herd

► by **Rick Rasby**, beef specialist, University of Nebraska

A clean, safe water supply

Of all the nutrients listed for livestock, water is most critical. The minimum requirement of water for cattle is a reflection of that needed for body growth, for fetal growth or lactation, and of that lost by excretion in the urine, feces or sweat, or by evaporation from the lungs or skin. Anything influencing these needs or losses will affect water needs of livestock.

A primary challenge when managing cows on pasture in times of drought is water, especially if the water source for the cows is from a dugout. If the water source for livestock is a pond, as the grazing season progresses from spring to fall in a low-rainfall year, the water available in the ponds/dugouts decreases. As the amount of water in the dugout decreases, components in the water become concentrated. If there are contaminants or compounds in the water that could cause toxicity or decrease the drinkability of the water, these are concentrated as water level in the ponds decreases.

How much do cattle need?

Water intake is mainly influenced by environmental temperature, class of livestock, animal weight and feeds consumed. Water needs of the animal increase as temperature

increases. Lactating cows have a greater need for water as compared to non-lactating cows. Data suggest bulls have a greater daily water requirement than non-lactating cows because bulls weigh more than cows. As feeder cattle



get heavier, daily water intake increases. Feeds that contain water, like lush spring grass, reduce water consumption.

A University of Georgia publication estimated water requirements for cattle in different production stages if the daily high temperature is 90° F. For cattle in this environmental condition, a growing animal or a lactating cow needs 2 gallons (gal.) of water per 100 pounds (lb.) of body weight. A non-lactating cow or bull needs 1 gal. of water per 100 lb. of body weight.

As an example, spring-calving cows will need close to 24 gal. per day for themselves and another 4-10 gal. of water for their calf in these high-temperature environmental conditions. On days with extreme heat, expect the water usage to go up even further. Some of that water will come from the feed and vegetative grass they eat, but the major portion — 95% or more — will come from water provided in tanks, dugouts, etc. For the nursing calf, a portion of the daily water needs will come from the dam's milk.

Following are compounds/contaminants that seem to be most challenging for livestock water.

Water challenges

Salinity. Water that contains high amounts of total dissolved salts (TDS) can result in reduced performance. Research would suggest water that contains a TDS of 5,000 parts per million (ppm) results in about a 10% reduction in performance. Guidelines suggest that water that contains 3,000 ppm TDS or less is usually satisfactory for most livestock.

Nitrates. In the rumen, nitrates are converted to nitrites, and nitrites are absorbed into the bloodstream, which in turn converts hemoglobin to methemoglobin. Methemoglobin reduces the oxygen-carrying capacity of the blood. A safe level of nitrate nitrogen in the water for cattle is less than 100 ppm. Remember, total nitrate intake would be the sum of the nitrates contained in both the feed and water consumed.

Sulfates. The sulfate recommendation for calves is less than 500 ppm (167 ppm

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sulfur as sulfate). For adult cattle the recommendation is less than 1,000 ppm (333 ppm sulfur as sulfate). Remember, distillers' grains can be high in sulfur, and sulfur intake is the amount from the feeds and water consumed.

Blue-green algae. Stagnant water is an excellent environment to develop blue-green algae that can be toxic to cattle. The scum that you see on the inside of stock tanks is algae. Ponds seem to be the most common reservoir for blue-green algae. Toxicity is most common after rapid bloom normally occurring in late summer when cattle have their greatest water consumption.

Toxicity as a result of blue-green algae is difficult to predict. Algae blooms can be controlled in a pond by using copper sulfate (blue stone). Be aware that a rapid die-off of algae may result in killing fish. Copper sulfate treatment may be ineffective if alkalinity of the water is less than 300 ppm. The maximum tolerable level of copper sulfate in water is 2.7 lb. (sheep) and 6.8 lb. (cattle) per acre-foot. Contact your extension person for guidelines for the amount of copper sulfate to use.

The best way to control blue-green algae is to eliminate the source of nutrients entering the pond.

Manure in dugouts or ponds

Manure is a common contaminant in cattle drinking water, particularly when the primary source of water is a pond where cattle may spend a good deal of time. Manure is carried into drinking water on the cattle's hooves and is deposited directly when the animals defecate. Livestock drinking water that is contaminated with manure can result in bacterial growth and contamination. High levels of bacteria have been found in cattle watering ponds where they may contribute to outbreaks of coliform-related illnesses caused by *E. coli*, *E. aerogenes*, and *Klebsiella* species. These can lead to mastitis, urinary tract infections and diarrhea.

Fecal contamination of livestock drinking water can cause algae blooms through a process known as nutrient loading, or eutrophication. Blue-green algae can be a common contaminant in standing water. When ponds become overgrown with algae, cattle will avoid drinking from them in favor of other water sources, if any exist. If no other source of fresh drinking water is available, they will decrease their overall water intake, which results in poorer performance.

It will take some time and thought by producers to figure out how the pond can be used as a water source for cattle and not a place for them to cool themselves, defecate

and urinate. You can access a resource that discusses floating pond fences at www.uaex.edu/publications/PDF/FSA-3128.pdf.

Final thoughts

Water is the most important nutrient for cattle. Daily provide a clean supply of water for your cattle. As you think about developing grazing systems, the water system will affect grazing distribution. Using ponds/dugouts is a common water source for beef cattle grazing pasture. Explore opportunities to

reduce contamination of all water sources. If you need to test the water supply that is used for cattle, contact your extension office to determine a laboratory near you that will test livestock water.



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