

Some points to consider about cattle water

Ted McCollum III, PhD, PAS-ACAN
Extension Beef Cattle Specialist

As the drought continues and temperatures remain above normal, cattle water becomes of greater concern. We have recent reports of cattle deaths in or around watering points suggesting death associated with water consumption. Dr. Robert Sprowls from the Texas Veterinary Medical Diagnostic Laboratory in Amarillo is also seeing more cases than normal associated with water.

Because little or no forage growth has occurred this year, the forage contains very low amounts of water. An 1150 lb cow grazing green forage containing 50 to 70% moisture consumes about 30 to 70 lbs of water daily (the equivalent of about 3.5 to 8.4 gallons) from the forage she grazes. This year, as a result of no forage growth and a relatively low intake of dry forage, daily water consumption from grazed forage is probably around 3 to 5 lbs (or 0.4 to 0.6 gallons). Couple the low water intake from forage with the higher, more stressful temperatures this summer and intake of water from drinking sources takes on greater importance than "normal" years or even years with hot stressful temperatures but with green forage that can be grazed.

The lack of water from forage is more important than we credit. How many people would think of going out to work for a few hours without a jug of water to drink from periodically? The water in the grazed forage is the cow's "jug of water" that rehydrates her while she is out on the range or pasture. Heat stress can be less of a problem in years when the forage is actively growing and green even though ambient temperatures may be high because of water intake from grazed forage. But this year is different. The risk of heat stress is greater because we have high ambient temperatures combined with dry dead forage. The cow's "jug of water" is relatively empty this year and the risk of heat stress and water-related problems are greater.

Dr. Sprowls indicated that water deprivation, water intoxication and water quality all play a role in cases they have investigated. These three may act independently but often they are interrelated.

1. **Water deprivation** occurs when cattle cannot consume an adequate amount of water. Water is a nutrient just as protein, vitamins and minerals and reduced water intake results in reduced performance. Water deprivation can be fatal or can lead to circumstances that can be fatal (see water intoxication below).

Most would immediately associate this with a well that cannot pump enough water to keep up with cattle needs, or a breakdown of a well or watering system, or a pond or creek drying up. These certainly are of great concern but water deprivation can occur in circumstances when we perceive there is an adequate amount of water available.

Water quality can affect palatability of water and reduce consumption. In some cases, consumption may cease. So, the supply of water may be adequate but the cattle are deprived because they cannot or will not consume enough of the water. Total Dissolved Solids (TDS) and Total Soluble Salts (TSS) are two water quality measures that in themselves can lead to poor performance and possibly death. But TDS and TSS are also related to water intake. As the concentrations increase, water

intake is reduced. Salinity of water limits intake just as salt in feeds can limit intake. Hence water quality can lead to water deprivation.

Cattle behavior may lead to water deprivation. Cattle develop preferences for grazing sites, loafing areas, and, if more than one watering point is available, they may develop a preferred watering location in a landscape. So, a grazing area with multiple watering points may appear to have an adequate supply of water. However, if cattle have a preferred site and that site breaks down, dries up, or the water quality declines and reduces consumption, then water deprivation will occur.

Cattle with no familiarity of a grazing area can also suffer deprivation. Do not assume cattle will find water. When cattle are moved to new pastures, take them to water and observe their consumption to determine if they willing consume the water.

2. **Water intoxication** occurs when cattle (or any other animal, including humans) overconsume water and usually occurs following a period of reduced water consumption or increased water loss from the body. The cattle are dehydrated and consume an excessive amount of water. Electrolyte balance in the body is disrupted and water intoxication occurs and can be fatal. In cases of acute water intoxication, dead cattle will be found near the watering site.

Water intoxication typically follows water deprivation. So, a key to avoiding water intoxication is avoiding water deprivation.

Limiting water intake when cattle are moved to a new water source may be next to impossible. But if cattle are dehydrated, it may be worth the effort to allow them to drink but then find a way to limit the amount immediately consumed.

3. **Water quality** can directly cause problems in cattle or may indirectly cause problems. High consumption of sodium, calcium, magnesium salts and sulfates can lead to unthriftiness and in some cases can be fatal. Nitrates in the water may also be of concern. Coupled with reduced water intake these issues can become even more of a concern. Water quality can indirectly affect performance and health by reducing water consumption which exacerbates heat stress and can lead to water intoxication once cattle locate or can access palatable water.

Hot sunny days and warm stagnant water lead to blue-green algae blooms. Some species of blue-green algae are toxic. Consumption of the algae or the toxins from the algae can be fatal. The dead animals are usually found close to the watering site. Oftentimes the algae is concentrated on the downwind side of the pond as a result of wave action. Dead rodents, birds or fish along the downwind side of the pond may indicate the presence of blue-green algae. Limiting access to the downwind side of the pond by cattle may reduce risk of toxicity. Copper sulfate can be used to limit algae growth but caution must be exercised because excess copper sulfate can lead to stream pollution and can harm fish and plant life.

4. Don't rule out **toxic plants** that may be present around watering locations. The immediate area around ponds and tank overflows is disturbed and the moisture profile in the soil is better than out in the pasture. Even though drought conditions exist, disturbance and moisture are conducive to weed growth. Pigweed, kochia, Russian thistle, dock, buffalo burrs, etc. can grow in these areas, they are green, and may be attractive to cattle. If cattle deaths are occurring, see what has been grazed off around the watering area. Water may not be the culprit.

Considerations:

- As ponds draw down, check water quality to determine if problems may be present
- When moving cattle to new pastures, always drive them to the water sources so they know where the water is located

- Observe cattle at watering sites to see if they are readily consuming the water
- If a grazing area has multiple water sources and one or more of those breaks down, dries up, etc., it may be necessary to push cattle to the other sources of water
- When working cattle, do not hold them for long periods in pens without water
- Make certain weaned calves are familiar with water locations
- As ponds draw down, salt and other inorganic materials become more concentrated in the water. It may be necessary to remove salt licks from the pastures to avoid salt toxicity and/or reduced water consumption
- Do not use salt-limited feeds if water intake is a concern
- Realize that introducing cattle to water after a period of reduced water intake has risks
- If deaths are occurring and water is a suspect, do not initially rule out any aspects of deprivation, intoxication, water quality, or toxic plants. Reexamine what has occurred for the few days leading up to the deaths and then try to identify the causes.

For more information on water quality for livestock see:

Water quality: Its relationship to livestock. <http://animalscience.tamu.edu/images/pdf/beef/beef-water-quality.pdf>

Some measures of water quality for cattle

Item	Expected ¹	Possible Cattle Problems ²
PH	6.8 - 7.5	Under 5.5; Over 8.5
Dissolved solids	500 ppm or less	Over 3,000 ppm
Total alkalinity	0 - 400 ppm	Over 5,000 ppm
Sulfate	0 - 250 ppm	Over 2,000 ppm
Total bacteria/100 ml	under 200	Over 1 million
Total coliform/100 ml	less than 1	Over 1 for calves
		Over 15 to 50 for cows
Fecal coliform/100 ml	less than 1	Over 1 for calves
		Over 10 for cows

Adapted from: Water Quality for Beef Cattle: A Review of Extension Publications. D. Griffin, Univ. Nebraska Great Plains Veterinary Education Center, 2002