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AGRONOMY & BEEF BULLETIN



# HOW MUCH WATER DO CATTLE NEED AND WHAT WATER PROBLEMS SHOULD CATTLE PRODUCERS WATCH FOR?

Water quantity and quality is critical to cattle health and performance. Hot weather and drought conditions can impact both water quality and quantity for cattle.

#### HOW MUCH WATER DO CATTLE NEED?

There is an easy answer, and there is a right answer. A general guideline is that lactating cows need two gallons of water per 100 pounds of bodyweight per day. Bulls and dry cows need one to one and a half gallons of water per 100 pounds per day, according to the 2016 Nutrient Requirements of Beef Cattle.

Water needs are influenced by environmental temperature, class of livestock, weight, and stage of production. The warmer it gets, the more water cows need. Cows with nursing calves need more water than dry cows. As cattle gain weight, they need more water.

As an example, spring calving cows will need close to 20 to 24 gallons of water per day for themselves and another 5 to 10 gallons for their calf when it gets hot.

Some water comes from the feed they eat, and grass can be high in water content. Nursing calves meet some of their daily water needs with their dam's milk. However, it's best to plan on making sure cattle have access to the full recommended amount of good-quality water. It's particularly important that calves are able to reach the water levels in a tank, especially in hot weather. If cows come into water first and drink a tank down, calves may struggle to get a drink if there is a slow recharge on the water tank. This can lead to stress and health problems for calves. Depending on the watering system, giving calves "creep" access to a water tank they can reach separate from the cows can help to ensure calves stay hydrated. Augusta Co-op Solutions MiraFount, Cattle Waterer, 4 Ball. 70 Gallon

Energy free, frost-free design with heavy insulation inside rugged, polyethylene construction. Provide water to cattle all year long without worrying about freezing temperatures or extreme heat. 4 drinking holes. 70-gallon trough capacity.



The importance of water to beef cattle is often overlooked, and cattle

performance can be affected by water intake. Nutritionists balance diets for carbohydrate (energy), protein, vitamins, and minerals but water is the most critical of these nutrients. Several factors make water needs difficult to assess.

Because feeds contain some water, not all the water needs must be provided as drinking water. Feeds such as silages, green chop, or growing pasture are usually high in moisture, while grains and hays are low. When cattle consume feeds high in water content, they drink less water.

#### WATER QUALITY FOR CATTLE

Water quality is important for cattle health and performance. It's important to check water for nitrates, sulfates, and bluegreen algae if a problem is suspected.

#### **NITRATES**

Nitrates are of elevated concern in drought conditions. The total intake limit for cattle is the combined amounts from both feed and water. So if you have feed that's high in nitrates, but within acceptable limits, and water that is also high, but acceptable, the combination could exceed recommended limits and cause problems.

- A safe level of nitrate nitrogen (NO3N) in the water for cattle is less than 100 ppm.
- The sulfate upper limit for calves is less than 500 ppm (167 ppm sulfur as sulfate).
- For adult cattle, the upper limit is less than 1,000 ppm (333 ppm sulfur as sulfate).

Symptoms of nitrate poisoning include brownish discoloration of the blood, difficult and rapid breathing, muscle tremors, low tolerance to exercise, incoordination, diarrhea, frequent urination, collapse, and death.

#### **BLUE-GREEN ALGAE**

Blue-green algae can be toxic to cattle, and it grows in stagnant water, lakes, and ponds. When there's a lot of bluegreen algae, it makes the water look like someone has dumped a bucket of light green or turquoise paint in the water.

Signs of blue-green algae poisoning are diarrhea, lack of coordination, labored breathing, seizures, convulsions, and possibly death. Warm temperatures and sunlight can cause algae to grow rapidly, so keep an eye on that in both ponds

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and tanks. Routinely cleaning tanks and utilizing a copper sulfate treatment or chlorine treatment can help keep water tanks free from moss and algae.

Cattle standing in the water to fight flies, or walking through it to drink increases the solids suspended in the water, and the added nutrients from manure and urine may encourage algae growth. Limiting cattle access to only a portion of a pond can reduce pond water contamination. Pumping water in the deep part of a pond to a water tank is a way to still utilize pond water for cattle while reducing the risk of cattle consuming blue-green algae. Fly management can also help cut down on the amount of time cattle spend in the water.

#### WATER TESTING

Monitoring water quality is a way to manage risk. Knowing if there's a problem before symptoms show up in the cowherd is the best way to prevent losses to cattle performance, or death.

Taking a water sample and submitting it to a lab for analysis may take a few extra minutes, but if you're out checking water anyway, it's not much extra effort for the knowledge that the water is safe. While ponds and dams are often the most questionable in quality, the water in tanks and troughs may also need to be tested. Occasionally, events such as drought or flooding may impact the quality of water from a well or other source of water that is being used for livestock. Testing the water provides information needed to know if the water is safe for use.

Beef Magazine

## **PROTECT RUMINANT LIVESTOCK FROM HEAT STRESS** IMPLEMENTING HEAT EVENT ACTION PLANS CAN HELP PROTECT ANIMALS FROM HEAT STRESS.

Proactive management of livestock prior to and during heat events is critical in protecting livestock from heat stress.

Livestock specialists encourage livestock owners to monitor weather forecasts and anticipate when conditions may pose a significant risk to livestock. Such conditions exist when above-average temperatures collide with increased humidity.

A temperature-humidity index chart can help ranchers identify when livestock are most at risk for developing heat stress. Livestock begin to experience moderate heat stress at a temperature humidity index of 82 to 83, severe heat stress at 84 to 86, and extreme heat stress at 87 or greater.

Heat stress can significantly impact animal performance, health and welfare, making it critical to prepare a proactive management plan for unavoidable heat events. Heat stress occurs when an animal's cumulative heat load outweighs the animal's ability to dissipate heat, causing body temperature to rise.

Livestock specialists recommend several heat event action plans:

#### ACCESS TO QUALITY WATER SOURCES

Augusta Co-op Solutions

Crystalyx, Hi-Mag Fescue-Lyx, 200 lbs.

CRYSTALYX Hi-Mag Fescue-lyx is formulated to be self-fed to cattle consuming fescue forages with low magnesium levels. It is energy dense and highly fortified with trace minerals and vitamins. May help reduce heat stress caused by fescue toxicosis.



SKU - 7191PL

Water availability and quality are essential to managing heat stress in livestock. Each animal should have at least 2 inches of linear water trough access. For example, a pen with 200 animals should have 400 inches of linear water space. Evaluating your water supply lines and ensuring sufficient water pressure and flow capacity to keep troughs full during peak water consumption is also important. The amount of water livestock need depends on the animal type and production stage, with requirements often doubling during heat events.

#### SHADE INFRASTRUCTURE AND FLY CONTROL

Livestock owners should consider placing temporary or permanent shade structures for livestock in confinement operations or open pastures with little to no tree cover. Each animal should have a minimum of 20 feet of shade space (10 feet for small ruminants) to prevent animal grouping and comingling of sick animals. Spraying for flies prior to a heat event will also be a vital step in reducing animal grouping. Importantly, shade structures should not impede air movement, and wind barriers should be removed to promote better air movement. Livestock in confinement benefit from mounds that provide elevated wind access.

#### SURFACE COOLING STRATEGIES

Proactive management of pen surface temperature can be an effective way to reduce the risk of heat stress. These strategies include dampening the pen with water or adding light-colored bedding (straw or corn stalks) to reduce the temperature of the ground. Sprinkler systems are a popular way to cool ground temperatures in confinement cattle operations. This strategy should be implemented well before a heat event and before peak heat on high-temperature days. Large water droplet size is important to avoid increasing humidity.

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#### **ANIMAL HANDLING**

Any type of livestock handling, processing or transportation should be avoided during heat events as much as possible. If working with livestock is absolutely necessary, livestock handling should be limited to the early morning hours (prior to 10 a.m.). Calm animal handling techniques will be important to minimize stress related to handling, and livestock owners should consider working with smaller groups of livestock at a time to prevent crowded facilities. Working facilities, including holding pens, should have ample access to water, and personnel should be dedicated to monitoring livestock stress status. Avoid working livestock in the evenings during a heat event to give livestock time to recover and cool down during cooler periods of the day.

#### **ADJUSTING FEED INTAKE TIMELINES**

Livestock owners should consider moving livestock feeding time to late afternoon or evening. This will allow rumen fermentation to occur during cooler night temperatures and increase the animal lung capacity during hotter daytime temperatures. If feeding multiple times daily, consider feeding a small meal in the morning and a larger portion of the diet later in the afternoon. Decrease the amount of feed offerings during and for several days after heat stress to allow animals ample opportunity to recover.

#### **KNOW WHEN TO INTERVENE**

Livestock suffering from heat stress will exhibit several signs of distress as their body works to return to homeostasis. Ruminant livestock, including sheep and cattle experiencing extreme heat stress, will exhibit increased respiration rate and panting score, foaming around the mouth, down head, and lethargic appearance. Livestock owners should keep in contact with their local veterinarian and contact them immediately if they have animals in severe distress. Animals should be gradually cooled by moving to nearby shaded areas with ample air movement. Rapid cooling (such as spraying with cold water) can have severe consequences for livestock in severe distress.

Beef Magazine

# TIME TO CHECK LIVESTOCK'S TRACE MINERAL LEVELS

# TEXAS A&M VETERINARY MEDICAL DIAGNOSTIC LABORATORY EXPERT EXPLAINS THE IMPORTANCE OF ASSESSING LIVESTOCK MINERALS.

Trace minerals play an important role in livestock health. They aid in bodily functions, production of offspring and an animal's overall wellbeing. A Texas A&M Veterinary Medical Diagnostic Laboratory, TVMDL, expert said despite their importance, trace mineral imbalances are easy to overlook — at least until a health issue occurs. As we transition to the summer season, the available nutrition and supplementation that was sufficient for livestock a few months ago may now be lacking. Brandon Dominguez, DVM, veterinary services section head at TVMDL, shares the importance of nutritional assessments and how livestock producers can mitigate future issues through diagnostic testing.

#### WHAT ARE TRACE MINERALS?

As the name suggests, trace minerals are elements the body needs in small amounts. The trace minerals most nutritionally essential for livestock are copper, cobalt, iron, manganese, molybdenum, selenium and zinc.

Animals cannot naturally synthesize trace minerals and must receive them from their diets. In the case of livestock, nutrient quality and availability may vary depending on the season, environment and access to supplementation.

"Often, the diseases and problems we see are related to nutrition," Dominguez said. "Animals can look like they are in good condition and growing well, but they may actually have an imbalance of important trace minerals affecting their health and production."

#### SIGNS OF A MINERAL IMBALANCE

Producers should consider testing animals for trace mineral imbalances if they begin to experience production problems, such as poor reproductive performance. Testing may also be considered when animals display clinical signs with no obvious infectious cause or if signs start after a change in feed.

"These minerals are parts of enzymes and molecules that the body needs. They help with oxygen transport and activate various metabolic pathways," Dominguez said. "When there is an imbalance, you can see a variety of symptoms. With a copper deficiency, for example, we may see a lightening or graying of the hair coat in cattle. Low copper levels can affect immunity and cause poor growth and reproductive performance. In sheep, low copper levels can cause lambs to experience spinal development issues and ultimately swayback, where the hind legs are paralyzed or limited in motion."

Though many health conditions are associated with a deficiency in trace minerals, he said some can also be caused by an excess.

"Molybdenum doesn't have any known effects when it's deficient. However, in excess, it can cause diarrhea, decreased growth, anemia and stiff-gaited lameness," Dominguez said. "It also affects the hair, causing a loss of pigmentation; in wool sheep, it may cause a steely feeling wool."

# **SCOURS – A LITTLE PREPARATION GOES A LONG WAY** THIS ARTICLE IS ABOUT CALFHOOD DIARRHEA, ALSO CALLED SCOURS. THIS IS THE MOST COMMON INFECTIOUS DISEASE THAT CAN CAUSE DEATH IN BEEF CALVES.

Calfhood diarrhea, commonly called scours, is a disease that frequently kills calves and can quickly spread through a herd. It is the most common infectious cause of death in beef calves less than three weeks of age (USDA, 2020). When outbreaks occur in these young calves, it can add tremendous stress to an already busy calving season. A wide variety of pathogens can cause calf scours, including bacteria, like Escherichia coli; viruses; like rotavirus and coronavirus; and even protozoa, like Cryptosporidium.

Though they cause diarrhea by different mechanisms, all these pathogens ultimately lead to increased water losses in the feces, resulting in dehydration (Foster & Smith, 2009). Calves with diarrhea will have watery feces that barely sit atop bedding or completely sink into the bedding. It may also cause manure to stain the back end or tail of the calf. In addition to signs of watery feces, calves may also be depressed, uninterested in suckling, have sunken eyes, and may even be unable to rise. When calves do get scours, prompt treatment is critical to prevent death.

Treating the dehydration of calf scours is vital. The severity of dehydration can be estimated by assessing how sunken the calf's eyes are or by pinching the skin on the shoulder or neck of the calf and assessing how long it takes to return to normal. The more sunken a calf's eye is, the more severe the dehydration. When the eyeball is sunken by about half a centimeter from normal, it indicates moderate dehydration. In a calf with this level of dehydration, the pinched skin would take 2 to 5 seconds to return to normal (Smith, 2009). Oral fluids, given in addition to milk, are the first line of treatment for dehydration. Choosing an oral electrolyte product with an alkalinizing agent is important because dehydrated calves can quickly become acidotic, which is one of the reasons they stop suckling. Bicarbonate, acetate, and propionate are common alkalinizing agents in oral electrolyte solutions, but acetate and propionate are preferred. These have the advantage of providing energy to the calf, and they do not interfere with milk clotting in the abomasum, an essential step in milk digestion (Smith, 2009).

Oral electrolyte feeding, in addition to milk, should be continued until the dehydration is corrected and the feces begin to firm up. When dehydration is severe, oral fluids may not be sufficient. These calves need subcutaneous or intravenous fluid therapy. Sometimes, veterinarians may also recommend anti-inflammatories to manage pain and fever or antibiotics if a bacterial cause or more extensive systemic illness is suspected. Determining how to manage severely ill calves can be done by having the calf examined by a veterinarian, or by working with a vet ahead of calving season to build treatment protocols that will allow prompt treatment without needing emergency veterinary care.

Unfortunately, calf scours can rapidly progress to severe disease and can frequently be deadly. This is why prevention is critical. As with all calfhood diseases, colostrum is vital to disease prevention. All calves should be up and suckling within two hours of birth to receive sufficient colostrum. If calves do not suckle soon after birth, they need to be fed colostrum milked from their dam or a commercial colostrum replacer. Though colostrum replacer products are expensive, they are invaluable to calf health when needed.

Scours-targeted oral antibody products can supplement maternal immunity from colostrum. These oral pills or pastes are administered within a few hours of birth to boost calf immunity against scours pathogens. An alternative is to vaccinate cows with a scours vaccine before calving to increase immunity against scours pathogens in natural colostrum. Assuring calves receive colostrum helps to increase their resistance to scours pathogens, but it is also important to decrease their exposure to these pathogens.

Providing plenty of clean, fresh bedding is helpful, but this alone is not enough. Young calves frequently acquire scours from older calves. When a calf gets sick, having an area to separate them and their dam from the main calving or housing areas can reduce the level of pathogens in the main housing area. This, in turn, protects younger calves from exposure to disease. If space allows, setting up multiple calving areas, indoors or out, and moving cows that have not calved to a freshly cleaned pen or unused pasture every couple of weeks can also help reduce exposure between younger and older calves.

When preparing for calving season, building a plan to manage calf scours is important. Essential steps to prepare for and prevent scours include:

- Have a good quality colostrum replacer on hand prior to calving season.
- Keep a few packets of oral electrolyte solution with acetate or propionate on the farm.
- Talk with your vet about using a scours vaccine on your dams or an oral antibody product, particularly if scours has been an issue in the past.
- Talk with your vet to build treatment protocols for calf scours so you can manage cases quickly if they arise.

Penn State Extension

# **MANAGING A KEY INVESTMENT: THE BEEF HERD SIRE** THIS ARTICLE WILL DISCUSS THE IMPORTANCE OF THE HERD SIRE AND CONSIDERATIONS FOR HIS SELECTION AND CARE.

In this article, I will put forward some considerations for your bull leading up to and including the current breeding season. However, managing the bull's health and productivity is a year-long process that is often not able to be corrected overnight if mismanaged. Spermatogenesis is the production and development of sperm and is a 60-day process. In other words, the sperm that hopefully settles the first cow of the breeding season was created two months ago... Were you focused on your bull two months ago?

Nutrition is a key factor in bull care. Bulls need to be in proper body condition at the start of the breeding season, which is a 5.5 to 6.5 Body Condition Score on a 9-point scale. Bulls that are over-conditioned or under-conditioned may fail in the breeding pasture.

Young bulls that have been developed on high-energy diets and are over-conditioned need to be "let down" slowly and have their diets switched to a more forage-based ration for at least 30 days prior to turn out. Bulls that are overconditioned at the beginning of breeding season often experience dramatic weight loss that can affect fertility, endurance, and even interest in servicing females. Bulls do need to be fed in the off season so that they are in good body condition and proper mineral status well in advance of being turned out. Regaining condition is especially important after a yearling bull's first season as he will continue to grow to reach his proper mature weight.

Exercise also plays a role in the endurance and mating ability of a bull. Make sure that your herd sire is sound on his feet and legs and has been housed so that he receives daily exercise. Bulls should not be taken straight from being housed in a barn or small lot and be turned out and expected to cover large pastures. Bulls need to have a proper period to exercise and be able to tone up before heavy service.

Bulls should be included in your operation's normal health programs, such as vaccinations and deworming. These practices need to be performed well in advance of the breeding season. Specific protocols should be developed with your veterinarian and will be focused on the challenges of your area and operation.

Body Condition Scoring and evaluation of feet and legs help us to evaluate the bull from a physical standpoint; however, to increase the true success of the bull's ability to complete his duties, we should also complete a Breeding Soundness Exam on bulls each year. Yearly Breeding Soundness Exams (BSE) should be conducted before the breeding season so that a producer has the time to correct issues or replace the bull if issues are found. A bull's breeding ability can change from one year to the next and even within a breeding season, so annual evaluation is important. It is also important to observe the bull throughout the breeding season because injuries can occur that would hinder his ability to settle cows.

Several factors go into a BSE and all of them play an important part in the bull's ability. Exams are broken into three basic areas:

- 1. Physical Examination feet, legs, eyes, sheath, and overall structural condition
- 2. Reproductive Examination internal and external sex organs, scrotal circumference
- 3. Semen Collection and Examination at least 30% Motility and 70% morphology

Briefly, for example, there are minimum Scrotal Circumferences (SC) for different ages of bulls (Table 1). Scrotal Circumference not only plays a role in fertility, but research has also shown that bulls with larger scrotal measurements produce daughters that tend to reach puberty earlier and are more fertile.

Libido is something that is not evaluated in a Breeding Soundness Exam but is extremely important to a successful breeding season! You should make sure that you take the time to watch your bull once he is turned out to ensure he is finding and servicing cows that are in heat. Mark a few dates down as to when certain cows could be coming back into heat and watch to make sure a large number are not re-cycling. Bulls can lose their libido because of injury, extremely heavy service, or competition with other bulls. If you are running multiple bulls in a pasture, it is best to put bulls of similar age and disposition out together so that the odds of heavy fighting and injury decrease.

| Table 1. Minimum Scrotal Circumference requirements based on bull's age |     |       |       |       |
|---|-----|-------|-------|-------|
| Age in Months   | <15 | 15-18 | 18-21 | 21-24 |
| SC in cm  | 30  | 31    | 32    | 33    |

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Heavy service may be determined by the bull to cow ration. Several factors should go into decisions on what your bull to cow ratio should be for a controlled breeding season. Things such as pasture size and terrain, time of the year, if synchronization and AI breeding were used, and age of the bull. The old rule of thumb is a bull in proper condition and soundness should be able to cover one female for each month of age (Table 2). But, there are several factors mentioned already that can change that number.

| Table 2. bull to cow ratio recommendations for a 65-day breeding season. |                   |  |  |
|--|-------------------|--|--|
| Bull's Age   | Number of Females |  |  |
| 12-16 months   | 10-15             |  |  |
| 17-23 months   | 15-20             |  |  |
| 24-29 months   | 20-25             |  |  |
| 30 months or older   | 25-35             |  |  |



Bulls will be the main source of genetic improvement in a cow herd and often are a large investment. Producers should make sure that this key investment has every opportunity to work! Successful breeding seasons are based on many factors that are influenced by the management of the cowherd and of the herd sire. Operations need to make sure that every effort has been made to manage the herd sire for a successful breeding season. Think about year-long care, health programs, nutrition, and Breeding Soundness Exams so that your bull performs well on day one of your breeding season.

Penn State Extension



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event details For deals on small grain booking, contact Trov Grimm, Mark Weekley, or any of the field staff. 540-885-1265

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25% off clothing, boots, & accessories! Staunton location only.

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