



Grazier

► by *Kindra Gordon*

Keep water quality in mind

As you plan for the upcoming grazing season, pay attention to the quality of the water available to your herd. That's the advice of South Dakota State University (SDSU)

Extension beef specialist Trey Patterson.

Patterson says calves on high-quality water tend to drink more, eat more and gain more than calves drinking water of poorer quality. In contrast, he says, "We know that cattle can die if we give them really poor-quality water to drink."

Investigating the effects

Patterson is among a team of animal and range scientists and Extension educators conducting studies in western South Dakota to learn more about the effect water quality has on livestock performance.

The data collected thus far suggests that pastured steers on good-quality water [water with 1,000 parts per million (ppm) total dissolved solids (TDS) or less] gain at least 0.2 pounds (lb.) per day more than cattle on water of poorer quality (water with more than 7,000 ppm TDS). That works out to about 1.85 lb. per head average daily gain (ADG) compared to 1.66 lb. for those on poorer water.

In feedlots, Patterson's research has shown poor water quality can reduce daily gains of steers on a growing ration by 0.4 lb. per day and increase the incidence of sickness and death loss. In the SDSU study, the group of steers drinking the poorest quality water had a 14% sickness rate and a 5% death loss during summer 2001.

What to look for

To combat the effects of poor-quality water, it's important to regularly evaluate the water quality available to your livestock. Patterson recommends testing all water sources on your ranch or feedlot in at least two different years to get an idea of water quality on your operation. Stock dams and

dugouts should be tested at least once in the spring and again in late summer or fall if you plan to utilize the water source at that time.

It is not a bad idea to test stock dams and dugouts every year to determine water quality, Patterson says. Periodic testing is likely adequate for most well and pipeline water, he adds.

Water quality is determined by the level of salts, measured by TDS, in the water. TDS can be estimated by a simple electroconductivity test. Tests are available at most county Extension offices, or you can purchase your own unit for less than \$50.

Sulfates in the water are the most common cause of toxicity. Cattle consuming extremely-high-sulfate water will often show signs of polioencephalomalacia (polio), which can be terminal unless cattle are treated in the early stages, according to Patterson.

"In addition, sulfur ties up copper and can create a copper deficiency," Patterson says. That in turn can affect reproduction, immune response and how cattle respond to vaccines, he adds.

Using the electroconductivity



test as an initial screen, Patterson says water with less than 1,000 ppm TDS is generally safe. Water with 1,000 to 3,000 ppm TDS is considered marginal, and performance may be affected slightly. Water indicating 3,000 ppm TDS or more should be sent to a lab for further testing.

"When we get over 5,000-8,000 TDS, there's a greater chance of reduced performance and polio, and alternative water sources should be considered," he says.

Most importantly, Patterson stresses that there is no way to determine whether water is high in sulfates or TDS simply by looking at it. "The only way to determine quality is to have a sample analyzed," he says.

He even recommends testing well water. "Water that looks clean and clear may actually be poor-quality," he adds. "You cannot visually appraise it."

Working with marginal water quality

If water sources on your operation turn out to be subpar in quality, Patterson says there are management solutions that may help make them usable.

"Water quality should be considered as part of your annual grazing plan. And if some water sources are poorer quality, you need to devise a plan to work that into your grazing system," Patterson says.

For example, he recommends using stock dams with marginal water quality early in the grazing season — before evaporation during summer increases salt concentrations in the water.

He also points out that young cows often have higher nutritional requirements and can have more health problems with subpar water. Therefore, plan to locate cattle with lower nutritional needs, such as dry cows or low-producing cattle, in pastures having marginal water supplies. Weaning calves

early can also reduce the water quality needs of lactating cows and make them more able to utilize lower quality water.

Patterson says blending marginal water with higher quality water may also be a way to keep costs minimal while still providing livestock a better source of water.

Lastly, producers can consider developing water pipelines to pastures. Although this is an expensive alternative, if water quality is taking its toll on animal performance, it may be an economical option. And, there are cost-share programs available from the Natural Resources Conservation Service (NRCS) to help develop water supplies for livestock.

Quantity is important, too

In addition to water quality, it's important to make sure cattle have access to an ample amount of water — especially in hot weather. As a guide, keep in mind that as air temperatures increase, an animal's water requirement increases.

For example, if the air temperature is 40°, an 800-pound (lb.) steer requires 6.3 gallons (gal.) of water per day. In 80° temperatures, he requires 10.6 gal. of water. If it is 90°, he requires 15 gal. of water.

Other factors affecting water intake include lactation, animal size and activity, and how much moisture is in the forage.

