

Livestock water quality likely to be impacted by drought

NDSU EXTENSION

Many ranchers in the region still depend on surface water sources, such as dugouts and stock dams, to provide water for grazing livestock. Access to good-quality water will continue to be a challenge for ranchers in North Dakota this spring, according to Miranda Meehan, North Dakota State University Extension livestock environmental stewardship specialist. “Due to drought conditions and low spring runoff, many livestock water sources have either dried up or may be toxic to livestock,” says Meehan. Water quality impacts cattle intake and weight gain. Studies have reported improved gains by as

much as one-quarter of a pound per day in yearlings and one-third of a pound per day in calves drinking good-quality water. When surface waters become low, the mineral component of the water becomes more concentrated because minerals do not evaporate with the water. Of particular concern are increased concentrations of total dissolved solids (TDS) and sulfates, which can be toxic to livestock. For most classes of grazing livestock, the TDS in the water should be less than 5,000 parts per million (ppm). Sulfate is part of the TDS. The recommended concentration should be less than 500 ppm for calves and less than 1,000 ppm for adult cattle. High levels of

sulfate can reduce copper availability in the diet. Elevated levels of sulfates may cause loose stool, whereas very high levels of sulfate can induce central nervous system problems. Water quality screenings conducted by NDSU Extension agents in the fall of 2024 found many water sources to have potentially toxic levels of sulfates, especially in western North Dakota. In preparation for the upcoming grazing season, Meehan encourages monitoring water quality and evaluating alternative water options. She recommends a couple of tools to aid in monitoring water quality: a hand-held TDS meter and sulfate test strips. Both these tools are affordable



An NDSU Extension agent demonstrates how to use a TDS meter to screen a livestock water source. | NDSU PHOTO

and easy to use. If the screening indicates the TDS is greater than 4,500 ppm and/or sulfates are greater than 800 ppm, submit a sample to a lab for additional analysis. If you have encountered water quality issues in the past, Meehan

says to evaluate and consider developing an alternative water source. “Installing a water development plan can help ensure that livestock can access good-quality water throughout the grazing season and increase a ranch’s drought

resilience,” says Meehan. For more information on livestock water quality, contact your local NDSU Extension office or visit <https://www.ndsu.edu/agriculture/ag-hub/ag-topics/livestock/water>.

Proper grain monitoring and storage remain critical in springtime

NDSU EXTENSION

As outdoor temperatures warm during spring and early summer, there is an increasing potential for grain storage problems and an increasing need for grain monitoring and management, says Ken Hellevang, North Dakota State University Extension agricultural engineer and grain drying expert. “The stored grain temperature increases in parts of a bin in the spring due to solar heat gain on the bin,” Hellevang says. Solar energy produces more than twice as much heat gain on the south wall of a bin in spring as it does during the

summer. That, in addition to the solar heat gain on a bin roof, can create an environment conducive to grain spoilage. A 10-degree temperature increase reduces the allowable storage time of grain by about half. For example, the storage time of corn at 17% moisture is reduced from about 130 days at 50 degrees Fahrenheit to about 75 days at 60 degrees and 45 days at 70 degrees. Hellevang recommends periodically running aeration fans during the spring to keep the grain below 40 degrees as long as possible during spring and early summer if the grain is dry. In northern states,

night air temperatures are normally near or below 30 degrees in April and 40 degrees in May. Bin vents can become blocked with frost and ice when the fan is operated at temperatures near or below freezing, which may damage the roof. Leave the fill and access door open as a pressure relief valve when operating the fan at temperatures near or below freezing. Cover the fan when it is not operating to prevent warm air from blowing into the bin or being drawn into the bin due to a chimney effect and heating the stored grain to temperatures more prone to spoilage and insect infestations. Hellevang also recommends ventilating the top of the bin to remove the solar heat gain that warms the grain. Provide air inlets near the eaves and exhausts near the peak so the top of the bin can ventilate due to warm air rising — similar to what occurs in an attic — or use a roof exhaust fan.

Monitor grain moisture and temperature
Hellevang advises that stored grain should be monitored closely to detect any

storage problems early. Grain temperature should be checked every two weeks during the spring and summer. A temperature increase may indicate a storage problem. Grain also should be examined for insect infestations. Check the moisture content of stored grain to determine if it needs to be dried. Remember to verify that the moisture content measured by the meter has been adjusted for grain temperature. In addition, remember that moisture measurements of grain at temperatures below about 40 degrees may not be accurate. Verify the accuracy of the measurement by warming the grain sample to room temperature in a sealed plastic bag before measuring the moisture content. Some in-bin cables estimate grain moisture content by measuring the temperature and air relative humidity and then calculating the grain moisture content based on grain equilibrium moisture content equations. The measured moisture may be 1.0% to 1.5% different than the true moisture content, so it is a tool that should be verified with another moisture content



Stored grain should be monitored closely to detect any storage problems early. | NDSU PHOTO

measurement method. Corn needs to be dried to 13% to 14% moisture for summer storage to prevent spoilage. Soybeans should be dried to 11% to 12%, wheat to 13%, barley to 12% and oil sunflowers to 8%. The allowable storage time for 13% moisture soybeans is less than 100 days at 70 degrees.

Store using grain bags
Grain storage molds will grow and grain spoilage will occur in grain bags unless the grain is dry. Grain in the bags will be at average outdoor temperatures, so grain will deteriorate rapidly as outdoor temperatures increase unless it is at recommended summer

storage moisture contents. Grain bags that run east-west will have solar heating on the south side, which creates a temperature variation across the bag that will move moisture to the north side of the bag. Continue to monitor grain stored in bags frequently. **Work safely**
In addition to properly storing grain, Hellevang advocates for following safety protocols when operating around grain storage. “Everyone needs to become aware of safety hazards associated with handling grain and to apply recommended safety practices,” Hellevang stresses.

SEALED BUS BIDS

The New England Public School will be accepting sealed bids for Bus #5, 29-passenger, 2013 IC Maxxforce 7 engine Bus approximately 165,500 miles and 5,925 hours on the bus. Bids will be accepted through May 2, 2025, at 2:30 p.m. Call 701-579-4160 with questions.

The New England Public School will be accepting sealed bids for Bus #9, 29-passenger, 2013 IC Maxxforce 7 engine Bus approximately 152,770 miles and 4,938 hours on the bus. Bids will be accepted through May 2, 2025, at 2:30 p.m. Call 701-579-4160 with questions.

The outside of the envelope must be clearly marked with “Sealed Bus Bid #5” or “Sealed Bus Bid #9”. Sealed bids can be submitted to: New England Public School, Tamara Volk, Business Manager, PO Box 307, New England, ND 58647, or dropped off at the New England Public School at 1200 Main Street, New England, ND 58647. Deadline to submit bids is May 2, 2025, at 2:30 p.m. Bids will be opened on May 7, 2025. The New England Public School reserves the right to accept or reject any or all bids.