Be Aware of Toxic Cyanobacteria

Jul 25, 2022

Cyanobacteria, also known as blue-green algae, can produce toxins that are harmful to livestock, wildlife and people. The hot, dry conditions we experience in the summer months are perfect for the production of cyanobacteria.

Cyanobacteria is caused by an excess of nutrients, particularly nitrogen and phosphorous. Manure and commercial fertilizers are spread to enhance forage and crop production. When these products are misused, either by inappropriate rate or timing of application, the potential for nutrient leaching to surface water is increased. When these nutrients enter surface water, they stimulate growth of cyanobacteria and other microorganisms.

There may be an increased potential for cyanobacteria blooms in some areas of North Dakota this year. In 2021, nutrients applied to fields were not effectively mobilized and used by plants due to drought conditions. Widespread overland flooding in the spring of 2022 may have transported these nutrients to waterbodies, increasing nutrient loads and the potential for blooms.

Given the current conditions, farmers and ranchers and the public should be on the lookout for cyanobacteria blooms. Blue-green algae often occurs in **stagnant ponds or dugouts** with elevated nutrient levels, forming **large colonies that appear as scum on or just below the water surface**. Live **cyanobacterial blooms can be green, but also red or yellow, and often turn blue after the bloom dies and dries on the surface or shoreline.**

Some species of cyanobacteria can be toxic when livestock and wildlife ingest them. Toxicity is dependent on the species consuming the water, the concentration of the toxin or toxins and the amount of water ingested. Cyanobacteria can produce neuro and liver toxins. Signs of neurotoxin poisoning can appear within five minutes or up to several hours after ingestion. In animals, symptoms include weakness, staggering, muscle tremors, difficulty in breathing, convulsions and death.

Animals affected by liver toxins may exhibit weakness, pale-colored mucous membranes, mental derangement, bloody diarrhea and, ultimately, death. Typically, livestock are found dead before farmers and ranchers observe symptoms. If cyanobacterial poisoning is suspected as the cause of death, check the edges of ponds for dead wildlife.

Farmers/ranchers who suspect cyanobacteria poisoning as the cause of a livestock death should contact a veterinarian to conduct a necropsy. Contact your veterinarian to determine which samples would be appropriate for your situation.

When collecting a water sample, follow NDSU Extension's **Livestock Water Testing Guidelines** (**www.ndsu.edu/agriculture/ag-hub/ag-topics/livestock/water/testing-livestock-water-quality-critical-during-drought/livestock**). Contact your local Extension agent for a sampling container or assistance collecting samples.

Be sure to wear gloves, as cyanobacteria can be toxic to humans. Collect a sample of the suspected cyanobacterial bloom from the surface of the water and deeper in the water. The sample should be kept cool but not frozen and submitted to the NDSU Veterinary Diagnostic Laboratory or a commercial laboratory. The sample can be evaluated microscopically for algae, or the water can be analyzed for several of the toxins at commercial labs at a higher cost.

Farmers/ranchers can prevent cyanobacterial poisoning of livestock by:

- Reducing nutrient levels entering the water source by implementing a nutrient management plan or establishing buffer strips with perennial plant species.
- Creating a designated drinking area where the risk of cyanobacteria is minimal.
- Fencing off a pond and pumping water from the pond to a water tank.
- Using water from other sources following periods of hot, dry weather.
- Pumping water from the center of the water body well below the surface, where the bacteria are unlikely to concentrate, to a water tank.

Unfortunately, unless steps are taken to reduce the nutrient load and minimize the potential for nutrients to enter the waterbody, there will continue to be a risk for cyanobacterial blooms.

Management practices to consider to reduce nutrient load are:

- Proper application of nitrogen and phosphorous to fields. Consider rate, time, amount and type of nutrients applied.
- Adapt soil conservation practices that reduce erosion.

- Hay or graze buffer strips to reduce the release of phosphorous as plants decompose.

Contact your county NDSU Extension agent for more information on cyanobacteria and nutrient management. For more information regarding water quality, visit **www.ndsu.edu/agriculture/ag-hub/ag-topics/natural-resources-and-facilities/water.**

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