

Use caution when grazing frost-damaged forage crops

NDSU EXTENSION

Several management steps can help mitigate risks of feeding frost-damaged forages to livestock.

As frost begins to appear across parts of the Northern Plains, temperatures have been low enough to cause leaf burning and plant stress in many frost-sensitive annual and perennial forage plants. James Rogers, North Dakota State University Extension forage crops production specialist, highlights three main frost effects: prussic acid production, nitrate accumulations and bloat.

"The most concerning of these frost effects is prussic acid which can develop in the sorghum family of plants," Rogers says. "If cattle are grazing sorghum forages and frost warnings are in the forecast, remove cattle until after a killing frost has completely killed the plant and residual growth has fully dried down."

Prussic acid can be released in the sorghum family when the plant undergoes a form of stress, such as frost, drought, grazing or chemical applications. When prussic acid develops, concentrations are highest in new, rapidly-growing leaf tissue and higher in leaves than stems, creating a hazard for grazing cattle. Once ingested by the animal, prussic acid blocks body cells from receiving oxygen.

A light frost can stop plant growth but will not kill the plant crown. The root crown then can still produce new shoots that can contain high levels of prussic acid. Cattle can detoxify a high percentage of low-level prussic acid exposure, but the high concentrations found in fresh regrowth following a stress period greatly increase the risk.

Fortunately, prussic acid levels drop as the sorghums dry. Complete dry down will usually take a week or more, depending on drying conditions. After the plants have completely dried down, it is safe for cattle to graze out the sorghum as a standing hay crop.

Frost can also cause conditions for nitrate



Frost-damaged sorghums may contain prussic acid, which can cause health risks for livestock. | NDSU PHOTO

accumulation. Forage crops such as annual cereals (oats, barley, rye), brassicas (turnips, radish), sorghums and millets can accumulate nitrates, leading to nitrate poisoning in ruminant animals. High nitrate levels may occur in hay containing these crops or late-planted crops that are targeted for late-season grazing or hay production.

Unlike prussic acid, drying of the forage for hay will not eliminate high levels of nitrate. Ensiling reduces levels by up to 50%, but if the initial nitrate level is high, even a 50% reduction might not be enough to reduce the concentrations to a safe feeding level for all livestock. Testing for nitrate levels is crucial to develop management strategies for feeding. Nitrate testing may be available at no cost to producers through NDSU Extension. Contact your local NDSU Extension agent for information about testing.

Frost damage can also increase the risk of bloat, particularly in legumes. In ruminants, bloat occurs when froth builds up in the rumen, preventing the animal from expelling gas. The gas builds, putting pressure on internal organs.

Frost damage in legumes or other plants with high levels of soluble proteins, such as alfalfa, clovers and vegetative cereal crops, causes a rupturing of plant cells, which then releases soluble proteins. Plant cell damage can also lead to increased levels of potassium, calcium and magnesium. These combined effects lead to increased risk of bloat in ruminants. This risk

is highest one to seven days after frost occurs.

To mitigate risk during periods of plant stress, Rogers suggests several management steps based on the issue of concern:

Prussic acid

- Avoid grazing sorghums following a period of light frost. Wait seven to 10 days or more before releasing cattle to graze.

- If new shoot growth begins following a light frost, avoid grazing until regrowth is 18 to 24 inches tall or after a killing frost.

- Wait seven to 10 days or more following a killing frost to allow time for prussic acid dissipation. Once the plants have completely dried, grazing can resume.

- Never turn hungry cattle out on sorghums.

- Harvest as hay or silage to reduce prussic acid concentrations.

Nitrate accumulation

- Test forages for nitrate levels.

- Dilute high-nitrate forages with low-nitrate forages to bring the overall nitrate level down to an acceptable level for feeding.

- Allow cattle a period of adjustment for higher levels of nitrate in the diet.

- Ensure nitrate levels in stock water do not increase risk.

- Monitor cattle health during the feeding period.

Prevent bloat

- If a pure stand of alfalfa has received a light frost, avoid grazing for at least three days or more to allow the bloat risk to decrease. For frost-damaged legumes, the biggest risk will be one

to five days following frost damage.

- If a killing frost has occurred, give plants time to dry down before. This may take a week or more depending on conditions.

- Avoid turning hungry cattle onto a frost-damaged pasture of pure legumes or high percentage of legumes, and limit the amount of time spent grazing.

- Provide some type of supplementation, such as poloxalene blocks.

- Monitor cattle health. Some individuals seem to be more prone to bloat than others. If bloat occurs, be prepared to treat animals quickly.

"Fall is a great time of year with the changing of the seasons, but it can also cause negative changes in our forages that can impact livestock health," Rogers says. "Be aware of these concerns and be prepared to deal with them."

For more information on managing frost-related risks in forage crops, contact your local NDSU Extension agent.

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NOTICE

PROCEEDS OF THE REEDER CITY COUNCIL
Official Proceedings of the Reeder City Council
"Subject to the Councils Review and Revision"
Reeder North Dakota
October 14th 2024

The Reeder City Council met at the Reeder Community Center for their regularly scheduled city meeting.

The meeting was called to order at 7:00PM by Mayor Wes Schwarzwalter. Council members were Dennis Munro, Barney Nichols, Dayne Green, Colten Larson by phone, and Don Munro, maintenance man Dayne made a motion to accept the minutes, seconded by Dennis, MC. Barney made a motion to pay the bills, seconded by Barney, MC.

Don gave a maintenance report. The council voted to give Don a \$250.00 a month raise and Char \$200.00. motion made by Dayne, seconded by Barney MC

#11833 Wages \$944.37
#11834 Wages \$461.75 #11835 Don Munro \$18.00 #11836 Consolidated \$199.65 #11837 SWWA \$1742.02 #11838 MDU \$1077.70 #11815 MDU 972.63 #11839 Wages \$944.37 #11840 Wages \$461.75 11841 Dept of Health \$25.00 #11842 State of ND \$183.52 #11843 Scranton Equity \$159.40 #11844 Runnings \$313.37 GS Publishing \$42.00 #11846 One Call \$1.50 #11847 USPS 50.00 #11848 USPS \$56.00

The next Reeder City Council meeting will be held November 11th 2024.

Barney motioned to adjourn meeting Dayne seconded it, meeting adjourned.

Attest: Wes Schwarzwalter, Mayor
Char Larson, City Auditor

Pub. Oct. 24, 2024

EMPLOYMENT OPPORTUNITY

The Adams County Highway Department is accepting applications for a full-time Maintenance Worker.

This is a safety-sensitive position. Applicants applying must sign the Drug Testing Release form (SFN 50098). Current and previous employers (within past two years) may be contacted. This position will be based out of the Adams County Shop in Hettinger, ND. Willing to train the right applicant!

The job description and the application may be obtained online at www.adamscountynynd.com or picked up and returned to the Adams County Shop at 102 2nd Ave NE, Hettinger, ND 58639. Full benefit package including retirement. 100% single health policy paid.

Starting wage: DOE.

Positions will be open until filled.

Feel free to call the office at 701-567-2235 or Road

Superintendent Justin Blade at 701-567-3376 with any questions.

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