

Feeding Drought-Stressed Silage

Overview

Severe drought can cause unsafe levels of nitrates to form in corn plants, especially in the lower stalks. Although precautions during silage harvest can reduce nitrate levels, dairy producers should be cautious when feeding drought-stressed corn silage.

What you should know

Excessive nitrates in feed interfere with blood hemoglobin, preventing normal oxygen uptake by the blood and leading to abortions in pregnant cattle. Symptoms of severe nitrate poisoning include rapid heartbeat, low body temperature, muscular weakness, staggering gait, muscular tremors, a blue coloration of mucous membranes and potentially death. Contact your veterinarian to help diagnose nitrate toxicity.

Action steps

- 1. **Ensure proper fermentation:** Ensiling helps reduce nitrate levels by up to 50% by converting nitrates to safer compounds. Adding limestone during ensiling may slow the fermentation process and reduce nitrate levels. Avoid feeding green chop silage.
- 2. **Test fermented silage for nitrates:** Under severe drought conditions, test all corn silage to determine nitrate concentrations. Levels of 1.76% or higher are toxic. (Reference the table for feeding recommendations.)
- 3. **Adjust ration based on test results:** If tests show high nitrate concentrations, work with your nutritionist to alter the ration accordingly. Here are some guidelines for feeding high-nitrate silage:
 - Balance the ration properly.
 - Introduce silage into the ration gradually, feeding frequently in small amounts.
 - Dilute high-nitrate corn silage with other feedstuffs.
 - Increase grain processing to help metabolize the nitrates.
 - Increase vitamin A levels in the ration.
 - If possible, segregate the suspected silage.

For more information, contact:



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Guidelines for feeding corn silage based on nitrate content

% Nitrate Ion (NO ₃) Dry Matter	Feeding Recommendation
Less than 0.44	Safe
0.44 to 0.66	Safe for nonpregnant animals. Limit to 50% of ration for pregnant animals.
0.66 to 0.88	Limit to 50% of ration.
0.88 to 1.54	Limit to 35-40% of ration. Do not feed to pregnant animals.
1.54 to 1.76	Limit to 25% of ration. Do not feed to pregnant animals.
1.76 or more	Harmful to livestock. Do not feed.

Resource: The Ohio State University.



- Prolonged hot, dry weather can cause nitrate accumulation in droughtstressed corn.
- Too much nitrate can be toxic to dairy cows.
- Proper fermentation can help reduce nitrates.
- Rations can also be adjusted to account for high nitrate levels in silage.

NOTES: