Take Precautions When Feeding Drought-Damaged Corn as Silage

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Abstract
When a corn plant is stunted, or not growing normally, nitrates can build up in the plant. Typically nitrogen that is taken up by the corn plant is converted to amino acids – the building blocks of protein – but in the stressed plant this conversion does not occur. And that’s why producers need to know how to handle and feed drought-damaged corn in silage form, according to Steve Ensley of Iowa State University’s Veterinary Diagnostic and Production Animal Medicine (VDPAM) department.

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Take Precautions When Feeding Drought-Damaged Corn as Silage

By Steve Ensley, Department of Veterinary Diagnostic and Production Animal Medicine

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"The nitrate level can be high enough in stunted plants that if harvested as silage the nitrate can be toxic to livestock that consume the silage," Ensley said. "The most common problem is when drought-stressed corn is green chopped and fed to livestock without going through ensiling."

Ensiling will lower the amount of nitrate in the plant. Nitrogen availability to the plant, which will depend on recent rain, fertilizer applied and other factors, will affect the level of nitrate in the plant. If producers are planning on making silage from drought-damaged corn, the only way they can be sure about the level of nitrate is to do some sampling and testing of the corn silage before feeding.

"Producers have several options to help determine whether nitrate toxicity might be a problem," Ensley said. "Assess the corn field that will be harvested to determine how much of the field has stunted corn that's not developing a normal ear. Take samples either by taking grab samples of silage cut by a forage chopper or by cutting several entire plants by hand that represent the various types of corn in the field."

A quick test that will screen for the presence of nitrates in stalks without having to chop the stalk can be done by ISU Extension beef and dairy program specialists. A drop of diphenylamine in sulfuric acid on the surface of a stalk split in two will turn a blue-black color if nitrate is present. However, this does not provide a concentration of nitrate. Availability of this screening test varies. In some cases, the screening test may be a part of drought meetings where the beef or dairy field specialists are present.

Other options include getting a representative sample of several stalks and performing a strip test, which can help determine the concentration of nitrate with sending in a sample. ISU Extension beef and dairy program specialists also will have capability for this, but due to the time required to prepare the sample for analysis the availability will be more limited than the screening test. Samples also can be sent to commercial feed analysis labs, or your veterinarian can send samples to the ISU veterinary diagnostic lab.

For more information on nitrate toxicity in drought-damaged corn silage, see the fact sheet “Nitrate Toxicity” on the Iowa Beef Center website. Producers also can contact their ISU Extension beef program specialist or dairy.
feeding drought damaged corn as silage

program specialist. Additional drought-related information is available on the ISU Extension website and the Iowa Beef Center website.

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