

News Column

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NITRATES AND PRUSSIC ACID

I heard via e-mail last week about a northeast Kansas field with volunteer corn testing at 9,293 ppm nitrates. Anything testing above 9,000 ppm is considered “dangerous to cattle and will often cause death”.

I don’t know where that field is in northeast Kansas, but it serves as a warning to the rest of us. If there is volunteer corn in fields, nitrates should be tested before opening the gate to let cattle out to graze the residue.

We had a corn field like that a few years ago just outside of Manhattan, near Keats. It seems recent, but it was probably 2012, a drought year. It had been dry throughout the summer, then rained shortly after corn harvest, maybe even before harvest. In this case it was suckers coming off the original plant rather than volunteer corn, but the result was the same.

The new growth looked great. It was 12 to 18 inches tall, and lush and green. The cows would have loved it,....and that was my concern. Cattle can consume high nitrate feed as a portion of their diet as long as they eat something else along with it to dilute the total nitrate level. But, this stuff was so tender and juicy that I was afraid they wouldn’t eat anything else.

I don’t know what became of that field, but I know it wasn’t grazed while the suckers were still green. We talked about grazing it later in the season, after a frost, when the newer growth would be dried and brown like the rest of the field. That might have worked, but it also might not have worked.

The logic of grazing after the new growth had dried down was that the cows would have then been more likely to consume a mix of old and new growth, thus diluting the nitrate level that was so high in the new growth. The danger to that logic is that those new plants could still be more tender than the older, more mature leaves. Given a choice, the cows might have chosen to eat only the tender – high nitrate – plants.

A dangerous misconception that some people have is that nitrate levels will decline after a hard freeze. That won't happen. Feeds that have high nitrate levels at the time they are harvested will retain those high nitrate levels. A hard freeze accomplishes the same thing as swathing and baling. It locks in the nitrate level.

The exception to the rule is silage. Feed that has been chopped and allowed to ferment to become silage will have about half the nitrates as the same feed if it was swathed and baled instead.

I should also be somewhat careful in saying a hard freeze locks in the nitrate level. The nitrate level may actually increase for a few days, depending upon the severity of the freeze. The point to be made though is that a freeze won't release the nitrates and it won't make a dangerous feed safe.

The confusion regarding what happens when plants freeze likely comes from confusing nitrates and prussic acid. Prussic acid is the other dangerous cow killer that we often talk about in the same sentence with nitrates. Unlike nitrates, prussic acid will dissipate after a freeze, making feeds with high prussic acid levels safe to graze 7 to 10 days after a killing freeze.

Prussic acid is the poison we are often concerned about when grazing regrowth in sorghum fields. Nitrates are the poison we most often worry about in drought years. They are both concerns, but for slightly different reasons.

To manage prussic acid concerns we recommend waiting a full week after a hard, killing freeze before grazing milo stalks. To deal with nitrate concerns, we recommend testing the forage.

We can have your forage tested for nitrates at the KSU Soil Testing Lab for just \$6.75 per sample. Turnaround time is quick, often just a couple of days. Bring samples to our office and we'll do the rest.

If you have questions, you can reach me at the Riley County Extension Office at 785/537-6350. Or, you can send e-mail to gmclure@ksu.edu.

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