

Across the County

Nitrate Toxicity

By  
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Fear



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The potential for high nitrate concentrations occurs when crops such as corn, sorghum, cereal grains and some grasses are exposed to drought, hail, frost, cloudy weather, or soil fertility imbalance. When fed to livestock, nitrates interfere with the ability of the blood to carry oxygen.

Nitrate toxicity is a misnomer because nitrite (NO<sub>2</sub>), not nitrate (NO<sub>3</sub>), is poisonous to animals. After a plant is eaten, rumen bacteria rapidly reduce nitrates in the forage to nitrites.

Normally, the nitrites are converted to ammonia and used by rumen microorganisms as a nitrogen source. However, if nitrite intake is faster than its breakdown to ammonia, nitrites will begin to accumulate in the rumen.

Nitrite is rapidly absorbed into the blood system where it converts hemoglobin to methemoglobin. Red blood cells containing methemoglobin cannot transport oxygen and the animal dies from asphyxiation.

Symptoms of nitrate toxicity may appear within a few hours after eating or not for several days. Lower nitrate levels can cause abortion without any other noticeable symptoms.

Acute toxicity usually is not apparent until methemoglobin approaches lethal concentrations. Symptoms include cyanosis (bluish color of mucous membranes), labored breathing, muscular tremors and eventual collapse.

Coma and death usually follow within two to three hours. Postmortem confirmation of nitrate toxicity is chocolate-colored blood; however, the color will change to dark red within a few hours after death.

Diagnosis and treatment of nitrate toxicity should be performed by a veterinarian.

Forage suspected to contain high nitrate levels should be tested by a laboratory before feeding.

Nearly all plants contain nitrate, but some species are more prone to accumulate nitrate than others. Crops such as forage and grain sorghums, sudangrass, sudan-sorghum hybrids and pearl millet are notorious nitrate accumulators. Weed species such as kochia, lambsquarters, sunflower, pigweed and Johnsongrass also are often high in nitrate.

Under certain environmental and managerial conditions, corn and cereal grains like wheat and oats, and other plants can accumulate potentially toxic levels of nitrate. Under extreme stress, legumes like alfalfa and soybean also can accumulate nitrate.

Nitrate content generally is highest in young plant growth and decreases with maturity. Sorghums and sudan grasses, however, are exceptions because concentrations can remain high in mature plants. If plants are stressed at any stage of growth, they can accumulate nitrate.

Highest nitrate levels occur in the lower one-third of the plant stalk and concentrations tend to be low in leaves because nitrate reductase enzyme levels are high there. Grain does not contain appreciable amounts of nitrate.

Silages made from stressed forages should be analyzed after ensiling because the fermentation process usually converts about 50 percent of the nitrates to a nontoxic form. If forages are harvested as hay, nitrate concentrations remain virtually unchanged over time.

High nitrate forages may be grazed, but a dry roughage should be fed first to limit intake. Light to moderate stocking rates should be used because overgrazing forces cattle to eat the stems which contain the highest nitrate levels.

Cattle should be removed from potentially susceptible forage for at least seven to 14 days after a drought-ending rain. Lush regrowth of heavily fertilized grasses can contain high nitrate levels and should not be grazed.

Before feeding potentially troublesome plants such as sorghum and sudangrass, analyze the forage for nitrates. Environmental conditions in Kansas create high nitrate concentrations in some forage virtually every year.

Consequently, nitrate analysis is necessary to determine if the feed is potentially toxic. High nitrate forages can be fed to animals if proper precautions are taken.

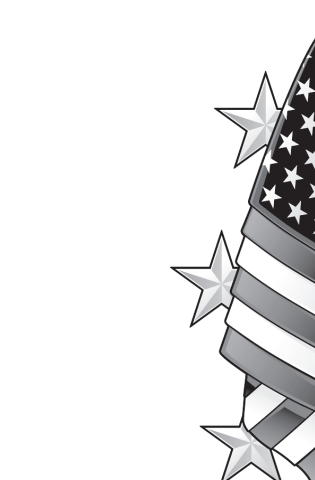
Till next week - Marty



**WORK PROGRESSES** at the Good Samaritan Village. The underground plumbing has been reconfigured which took some time. Now the roof trusses on the west side are up and the roof is being covered. Getting the new building

fully framed in will continue over the coming weeks. The Village is at full occupancy with 22 residents and more on the waiting list.

Herald staff photo by Karen Krien



**RON HILL, right, has presented the colors in the Cheyenne County Fair Parade for the last 21 years. Accompanied him was Howard Pouliquot. Both are World War II veterans and Navy career men.**



TRAIN

Continued from Page 1

and was tossed to the ground on the other side of the tracks and train.

The train had 10 cars. Two locomotives completely derailed and crashed to their sides. A baggage car also derailed and remained on about a 45 degree angle. A crew members' dorm car, a sleeper car, and a lounge car derailed, but stayed upright. The last three passenger coaches did not derail.

**The response**  
There were a total of 192 people (175 passengers and 17 crew members) on board the train. Chief Zimbelman said when the emergency call came in, they were expecting the worst. He said Benkelman only had two ambulances and there was no way that was going to be enough to handle the injured. Zimbelman said they put out the call for mutual aid.

Mile markers delineate not only highways, but also railways. Dundy County authorities reported that when an Amtrak train official made the emergency call they identified the location of the accident by the mile marker on the railroad.

However, in relaying that information, the dispatcher did not know that the Amtrak official was using railroad markers and equated the number to highway mile markers, which placed the site of accident near Max and not Doane. The dispatcher was said to respond to the Amtrak official that the accident was at Max and the official responded...yes, Max.

The Benkelman Rural Fire Department headed east and reached Max before turning around.

The Haigler Ambulance crew was the first on the scene, but the Benkelman Emergency units were not far behind.

Passengers started getting out of the train before the first emergency crews arrived.

Rick Starks, Haigler Emergency Medical Service, said one of the first things they did was to start separating the injured from the non injured.

Passengers and crew members were freely walking around the accident site. Many had cameras and cell phones and were snapping photos and taking videos of the train.

As the emergency crews arrived their training started to shine through.

Chief Zimbelman served as the incident commander and coordinated the efforts of the first responders.

It was not long before the wave of mutual aid emergency medical service, fire and police from neighboring communities rolled in.

"The response was overwhelming," said Zimbelman. "It was wonderful and amazing. They came from three states. It was just tremendous."

Zimbelman said they have been involved in mock disaster drills that were focused on events that involved large amounts of people. There was no panic and the response to the incident went about as well as it could have.

"We prepare for the worst, and hope for the best," he said.

At least 15 communities responded with emergency units

and personnel. Chief Zimbelman said there was likely around 250 emergency personnel at the site, helping the 192 passengers and crew.

Those numbers do not account for the dozens of other local citizens that stepped up to help.

The Dundy County Stratton School system provided buses to take the non injured passengers into town. The school opened the gym to the railroad refugees. The air conditioned building at the Dundy County Fairgrounds was also opened for people. An uncounted number of area residents and businesses donated an amazing abundance of food and drinks for the passengers.

**Saying goodbye**

From the high school, some passengers, like the group of 12 from Japan, made their own arrangements to continue on their trip. Others waited for busses that Amtrak provided for the rest of their trip. The busses were loaded and gone by mid afternoon.

**Bird City Times**  
~ and ~  
**The Saint Francis Herald**  
**will be closed**  
**Mon., Sept. 5**  
**in observance of Labor Day**  
DEADLINE for ads, news and pictures is Tuesday, Sept. 6 at 5 p.m.  
The paper will be delivered a day late.

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