Cattle Management
July 25, 2012 Webinar

Question: Can you green chop soybeans and put them in a bag to feed like alfalfa silage?
Yes, just remember the same guidelines apply as for making corn silage. Cut at the appropriate moisture, fill rapidly and pack well. The principles involved in making quality corn silage would also apply to soybean silage. Refer to the fact sheet on Making Quality Corn Silage. Also be sure and check any label restrictions from pesticides that were used during the growing season. (Dan Loy)

Question: Could I release the beef cattle into the growing corn field to graze the corn crop? Should I wait till the corn plants are yellow in the fall?
Waiting until the corn plants turn yellow may not change the percentage of nitrates. It all comes down to individual field conditions and even locations within various locations within the field. From a nitrate perspective and simple carbohydrate (sugar) overload, I am very cautious about recommending free-choice access to corn fields or other crops for cattle. As with other comments below, animals always need to be transitioned slowly onto new feedstuffs. It is important to consider the advice of your local Veterinarian and Nutritionist prior to making these drastic changes in diet. They MAY be likely to recommend testing of corn for nitrates prior to access. The ISU VDL submission form is available at http://vetmed.iastate.edu/sites/default/files/vdl/forms/ToxForm.pdf (Doug Snider)

I agree with Doug. Many questions from the webinar relate to immediate use of the corn crop through grazing or green chopping. The nitrate risk may be there, but it can be a high quality feedstuff. Work with your veterinarian and nutritionist. They will likely tell you to sample appropriately and test. If it is deemed safe then follow the recommendations for effective utilization such as blending with other feeds as necessary, strip grazing for effective utilization of the standing crop. This may go without saying, but be sure and contact your crop insurance representative before making any salvage decisions on crops. (Dan Loy)

Question: What about free choosing syrup for cows?
Syrup (condensed distillers solubles) is the highest of all corn co-products in sulfur content. Because of the potential of toxicity, free choice feeding is a practice that does make many (including myself) nervous. That said, many producers have successfully done this in situations with adequate to abundant forage. The sulfur tends to self limit intake under those conditions. This may not be true with short, drought stressed pastures. I would strongly encourage producers that want to supplement cows with CDS to limit their intake and not feed free choice. (Dan Loy)
Question: Is soybean silage an alternative to soybean hay?
Yes, see response to first question above. (Lee Kilmer)
Well conserved soybean silage likely will be better forage quality and intake than soybean hay. (Andy Lenssen)

Question: What is affordability of 65 day crops? For example, cutting beans or corn for silage and planting a short season crop.
As to the costs of a second crop, Ag Decision Maker does have budgets for small grains on their website. (Dan Loy and Mary Drewnoski)

A typical short-season crop on the Great Plains is proso millet. This species of millet, and all other millets, are very susceptible to damage or plant death from light frosts. Proso and foxtail millet, a closely related species to yellow and green foxtail weeds, are used as short-season ‘catch crop’ forages or grain crops. Both are relatively small seeded compared to corn and soybean, so planting depth should be relatively shallow, about 1-1.5 inches for proso and 1 inch for foxtail millet. Sudangrass or sorghum-sudangrass hybrids also can produce decent forage yields in a relatively short period of time if soil water, soil nitrogen and temperature are adequate. Unlike the millets, these species can be highly toxic to grazing livestock immediately after a light frost until plants have dried down. Additionally, when these plants are small, they can have substantial nitrate concentrations in their leaves. (Andy Lenssen)

Question: What about treating corn stalks for calcium hydroxide?
Treatment of crop residues such as corn stalks or wheat straw with a strong alkali has been documented to improve digestibility by 5-15 percent in research dating back to the 1970s. Compounds that have been used in research are many, but anhydrous ammonia, calcium oxide and calcium hydroxide are the ones that have been used to some extent on the farm. CaO or CaOH treatment requires the residue to be ground and mixed with water and CaOH so the final product is 5 percent CaO on a dry matter basis and is 50 percent water. The process produces considerable heat so the water must be added first to absorb the heat. Safety precautions need to be followed in handling the material. A few commercial companies are now offering this treatment as a service, but demand is high. Be sure and weigh the cost of treatment vs. the benefit. For some, supplementation of the untreated corn stover may be more cost effective alternative. (Dan Loy)

Question: How much can delayed forage harvest of corn affect (lower) nitrate levels?
Delaying harvest could result in lower nitrate levels depending on several factors: is the plant actively undergoing photosynthesis, how much additional rainfall (if any), etc. My main concern is to NOT delay harvest after the whole plant moisture level drops below the optimum levels. The main advantage of ensiling high nitrate corn is the fermentation bacteria will convert much of the nitrates to protein, but if the material is harvested too dry, then you will not get a good fermentation. Additional spoilage from poor fermentation and difficulty in packing drier material probably outweigh any advantages in delaying harvest too long. (Lee Kilmer)

Question: Also, can you feed drought damaged corn silage to horses?
Silage is not classically fed to horses or other monogastrics in the US. Although mentioned as an excellent feedstuff in several sources including DOW scientific, silage can carry with it many risks including Botulism, Tetanus, Listeriosis and mycotoxins (as indicated in the Q&A session). In fact, poorly prepared silage is a major risk to cattle and especially small ruminants! Again, this will depend on the method of preparation but as indicated in the lecture and other answers in this document - nitrates are less of a concern for horses. Most exposure to Nitrate/Nitrite in horses is the result of feed
contamination with a concentrated fertilizer containing Nitrite. So, if you are ensiling a feed to reduce the risk of Nitrates just for your horses - Please consider another feed source. And test the ensiled feedstuffs for nitrates prior to feeding to your cattle. (Doug Snider)  PS: These guidelines provided by DOW are actually quite good pointers for properly ensiling cattle feed.

Corn silage is unsafe for horses due to the potential for mold. One can feed haylage to horses safely. (Peggy Miller, ISU Equine Specialist)

Question: Does bagging silage reduce nitrate levels as much as piles or silos? And by how much?
I am not aware of data comparing reduction in nitrate for similar corn silage stored in various ways. The extent of nitrate reduction is directly related to the degree or quality of fermentation. Harvesting at optimum moisture levels, filling rapidly, packing well and adding an inoculant will all help get a better fermentation. Refer to the fact sheet on Making Quality Corn Silage. (Lee Kilmer)

Question: How high of nitrate level is tolerable in green chop for beef cows?
The Iowa Beef Center has a nitrate document posted on their website on feeding nitrate contaminated feeds to cattle. One percent or 10,000 ppm Nitrate (NO₃) is considered dangerous and toxic to all ruminants. If the feed contains over 0.65 percent or 6500 ppm Nitrate (NO₃), high risk ruminants (including stressed, ill or pregnant, etc.) cattle and other ruminants should not be exposed to high levels of nitrate-containing feed as a sole food source. When feeding nitrate contaminated feed, all groups of ruminants should be transitioned onto this feed slowly and it should be diluted until the total nitrate consumption (including water or other nitrate plant sources) is in total less than the references provided above. Please test the feeds and discuss the results with your local Veterinarian and Nutritionist. The ISU VDL has additional resources to help with individual cases as well once samples are submitted. (Doug Snider)

Question: Regarding making soybeans into hay, how well does it dry down? Any management strategies to keep in mind?
Wisconsin specialists have cautioned about increased drying time with soybean hay, especially as it becomes more mature. This is due to the coarseness of the stems. If making hay it should probably be harvested at an earlier stage than silage for this reason. (Dan Loy)

Red clover stems dry more slowly than alfalfa stems because they are thicker and they have a higher density of hairs. A high density of hairs on plants can help conserve water within the plant. Soybeans have longer hairs, and sometimes denser hairs, than red clover and soybean stems are at least twice the thickness of red clover stems. It can be difficult to produce high quality soybean hay. The high density of hairs on soybean can also make for 'dusty' hay, something that might result in decreased intake by livestock. Soybean hairs are not all bad however, as they provide excellent host plant resistance to potato leafhoppers. (Andy Lenssen)

Question: Can soybeans be harvested as baleage?
Soybeans should be a suitable forage for baleage. (Dan Loy)
Yes, soybeans can be harvested as bale silage. Dan Morrical suggested using a standard sickle bar mower-conditioner instead of a MoCo-type cutter. This will reduce forage losses during cutting and swathing. It likely will be necessary to wilt soybeans to about 65-70 percent moisture before chopping or baling the soybean. Excess moisture will result in seepage losses and lower quality silage. Additionally, use of a silage inoculant may be warranted. Soybean forage, like alfalfa, is much more highly buffered against pH drop than corn. Aerobic stability of soybean silage or bale silage when fed typically will be lower than for corn silage. (Andy Lenssen)

**Question:** Could you talk a bit about the suitability of soybean hay for dairy cows?
It all depends on the stage of maturity when harvested. Soybean hay cut early could be a supplemental forage for lactating dairy cows and a predominant forage for dry cows or pregnant heifers. (Lee Kilmer)

**Question:** Will dry cornstalks after harvest test high in nitrate for dry feed?
Nitrates may continue to be present at somewhat high levels in the stalks. However, this is not known to be a major toxicity risk from previous droughts. Since cows tend to select the lower nitrate portions of the residue (grain, husks, leaves) grazing management may be a big factor. (Dan Loy)

**Question:** Will the use of inoculant reduce the nitrates in silage?
Inoculants by themselves will not reduce nitrate levels in corn silage. They should help the fermentation process by helping to lower pH and achieve the anaerobic conditions necessary for a good fermentation. The better the fermentation, the greater the reduction in nitrates. Refer to the fact sheet Making Quality Corn Silage. (Lee Kilmer)

Generally speaking, anything that will contribute to better silage should help decrease nitrate. A faster drop in oxygen levels and pH due to higher production of acids provides better opportunities for anaerobic bacteria to reduce nitrate to non-toxic di-nitrogen, the nitrogen gas that occurs in the atmosphere. (Andy Lenssen)

**Question:** Extension used to have a hay line. Was this just for Iowa? Do you know how to find where hay is available?
There are links on the Dealing with Drought and the Iowa Beef Center website to hay information that might provide the information you are looking for. On the IBC website go to the hay and dry forages page and under Hay for Sale you’ll find links to a variety of sources, including links to pages of individual states, Canadian and international sources. (Sherry Hoyer, Iowa Beef Center)

**Question:** Are there problems with harvesting corn (chopping) and feeding as needed now?
If a producer is short on feed, corn can be chopped and fed immediately if it is low in nitrates. I would NOT chop any field without first checking several plants for nitrates first. (Lee Kilmer).
Additionally, chop and feed only as needed. Green chop allowed to sit will begin to break down and release cyanide. There have been a few cases of this submitted where no nitrates were found but prussic acid (HCN) was detected from green chop corn. (Doug Snider)

**Question:** After normal grain harvest of corn, would the nitrate concentration of baled stalks change?
Nitrate levels really do not change very much once the plant is dried and in the field. What changes is the moisture content as it dries. This will cause a relative increase in nitrate concentration but it is still nearly unchanged on a dry matter (DM) basis. Values are expressed in DM on the reference range provided in the Iowa Beef Center nitrate document. Nitrates are water soluble and can leach slowly down through corn stalk bales if stacked and wet thereby concentrating lower in the stock if stored for
long periods. But nitrate levels are not thought to change appreciably within a couple months prior to grazing stubble.  

*(Doug Snider)*

**Question:** If corn stalks are left high, will the stover still have high nitrates now or later when opened up for cows to utilize the grass in the ditches, along fence, etc.?

Nitrates may continue to be present at somewhat high levels in the stalks. However, this is not known to be a major toxicity risk from previous droughts. Since cows tend to select the lower nitrate portions of the residue (grain, husks, leaves) grazing management may be a big factor.  

*(Dan Loy)*

**Question:** When baling corn stalks for feed, should we choose the better fields or the ones that died early?

Without testing, you cannot eliminate the concern about some potential nitrate risk in the more stressed corn stalks. As feed, those stalks may be higher in energy value though.  

*(Dan Loy)*

**Question:** Should alfalfa and soybeans harvested for hay or other forage be tested for nitrates?

Soybeans and alfalfa are listed on the Iowa Beef Council document as nitrate accumulators. Please consider a quick and inexpensive test at the diagnostic laboratory. Submit a representative sample from the field of multiple whole plants. Prepare the sample as per the directions list in other comments on this document. 1) Place in one gallon Ziploc bag; 2) freeze overnight.; 3) ship “next day” or “overnight” in an insulated container, (if not frozen then refrigerate and ship on ice packs); 4) include a submission form available at [http://vetmed.iastate.edu/sites/default/files/vdl/forms/ToxForm.pdf](http://vetmed.iastate.edu/sites/default/files/vdl/forms/ToxForm.pdf)

Nitrate testing is $40. Moisture testing is $10 (if nitrates are found to be present - we will use both values to calculate the actual Nitrate concentration on a Dry Matter basis).  

*(Doug Snider)*

**Question:** Does feeding bentenite in the TMR mix help reduce effects of toxins?

There is some data indicating that bentonite will alleviate some mycotoxins but it will not do anything to reduce nitrate levels.  

*(Lee Kilmer)*

**Question:** If silage is tested and found to have, say 8,000 ppm nitrates, what proportion of the ration could be silage and be considered a "safe" level?

Guidelines for safe levels of feeding can be found in this publication: [http://www.iowabeefcenter.org/information/IBC50.pdf](http://www.iowabeefcenter.org/information/IBC50.pdf). If the silage was 8,000 ppm on a dry matter basis, then blending to a TMR of 6,500 ppm would be safe for all classes of livestock. (Dan Loy)

I agree with Dan, but remember - All ruminants should be transitioned slowly onto these diets. There have been a handful of incidences where the animals were consuming “safe” levels of feed but continued to have problems due to exposure from additional sources of high nitrate (including water sources) which can have an additive effect.  

*(Doug Snider)*

**Question:** How long does it take with the ensiling process before testing and if Nitrates aren’t low enough how long do you wait again before retesting?  What are the intervals in testing?

I would wait at least 30 days after filling the silo before testing – six weeks is better. There will be little fermentation activity after that and consequently no further reduction in nitrate levels.  

*(Lee Kilmer)*
Question: In terms of early weaning calves, what impact does the stress of weaning have on cows that are short bred? Will the stress cause early abortions?

Early-weaning calves is meant to reduce the stress on the dam (reducing the energy output for lactation). There is an indication that pregnancies are more susceptible to loss at approximately 15-17 days post breeding (around the time of implantation) continue to normally have early embryonic death at a rate of 1-3 percent per week up to 35 days, tapering thereafter. The fewest fetuses are lost beyond 63 days post-breeding when the placentation is better developed. There is very little data to suggest the stress of weaning will significantly increase this normal background early embryonic or fetal loss. (Doug Snider)

Bottom line: If pasture or feed resources are short, the cows are better off in the long run if you early wean. (Dan Loy)

Question: I am pumping water out of a pond with lots of algae around the edges. Does this pose a health risk to the cows?

Depends. Pond scum is quite typical but cyanobacteria (blue-green algae) can form a scum overnight when they aggregate following an event stressful to the cyanobacteria. In these events high levels of toxins are produced. Treating a pond with Copper Sulfate can also induce a stressful event causing a release of toxins. Therefore, animals should not be exposed to that water for several days post-treatment. The toxins will dissipate over the next days. Therein lies a strategy for preventative algae management. (Doug Snider)

Question: How should samples be submitted for nitrate testing? Should they be frozen, shipped cold? Does the test pick up both nitrate and nitrite levels? Doesn’t the plant continue converting nitrate to nitrite during shipping which would alter the true risk?

The ISU VDL generally recommends: 1) collect whole corn stalks from several representative locations within the field; 2) cut each stock into pieces able to fit into multiple one gallon Ziploc containers; 3) freeze overnight; 4) ship “next day” or “overnight” in an insulated container, (if not frozen then refrigerate and ship on ice packs); 5) include a submission form available at http://vetmed.iastate.edu/sites/default/files/vdl/forms/ToxForm.pdf. (Doug Snider)

Question: Is it OK to chop silage if daily temperature is over 90 degrees F? I have read in literature that it won’t ensile correctly.

Not sure where this is coming from, but corn silage is routinely made successfully in the southwest U.S. and central valley of California where ambient daytime temperatures frequently exceed what we’ve experienced in Iowa. (Lee Kilmer)

Question: How would supplemental DDGs affect nitrates?

Even though DDGs are relatively high in nitrogen (protein), they shouldn’t contribute significant nitrates to the animal. Actually any supplemental feed will dilute the nitrates that exist in the corn forage. I would be more concerned with the water as a potential source outside of the drought stressed corn plant. (Dan Loy)

Question: How long must the silage ferment to remove some of the nitrate risk?

Silage fermentation takes a minimum of three to six weeks under optimal conditions to complete both fermentation cycles. Ensiling feeds classically reduces nitrate composition when proper silage is made. This requires careful attention to best management practices for silage including but not limited to 1)
cut at the appropriate moisture, 2) pack well!!!, 3) fill quickly, 4) seal completely, and 5) consider adding inoculations. Always test prior to feeding – this means testing a representative sample. (Doug Snider)

Question: What will happen to the corn feed quality due to the drought?  
Past droughts have resulted in some corn that had some quality issues such as low test weights and perhaps field molds that thrive under hot dry conditions. We will not know the impact of this year’s growing conditions on grain quality for a few more weeks. (Dan Loy)

Question: If you hay/graze the CRP land this year and it doesn’t come back as strong in 2013, is the owner responsible for reseeding or what happens then?  
Please contact your FSA office on rules and responsibilities related to selling of CRP hay. (Dan Loy)

Question: What’s the comparative value between the bromegrass harvested from the CRP and corn stover?  
There are a lot of different soil types, forage species and management for the hay that can be harvested from CRP. Previous sampling that we were able to conduct on CRP hay averaged 51 percent TDN (energy) and 9.7 percent protein. As a point of reference, our book values for corn stover are 50 percent TDN and 5.9 percent protein. Average full bloom alfalfa should average 58 percent TDN and 15 percent protein. We suggest that you feed the CRP hay now to make up for reduced pasture availability and save your better hay for late gestation and lactation when the cows need more nutrients. (Dan Loy)

Question: Is nitrate a problem in soybeans that will be cut and baled? Or used for grazing? Could it be an available food source?  
Soybeans and other forages are listed on the Iowa Beef Council nitrate document as nitrate accumulators. Please consider a quick and inexpensive test at the diagnostic laboratory. Submit a representative sample from the field of multiple whole plants. Prepare the sample as per the directions list in other comments on this document. 1) Place in one gallon Ziploc bag; 2) freeze overnight; 3) ship “next day” or “overnight” in an insulated container, (if not frozen then refrigerate and ship on ice packs); 4) include a submission form available at http://vetmed.iastate.edu/sites/default/files/vdl/forms/ToxForm.pdf

Nitrate testing is $40. Moisture testing is $10. If nitrates are found to be present - we will use both values to calculate the actual Nitrate concentration on a Dry Matter basis. (Doug Snider)

Question: Do nitrates impact horses that graze 2012 cornstalks?  
Yes and No. Horses minimally convert Nitrate to Nitrite (the form that affects the hemoglobin). With that said, nitrates in extremely high doses have been associated with deadly methemoglobinemia. Horses can convert Nitrate to Nitrite in the hind gut but only about 25 percent of it is converted – in contrast to cattle which MAY convert nearly all of it. Testing is generally recommended for testing potentially harmful levels of nitrates to animals. Please contact your local Veterinarian and Equine Nutritionist for additional information. (Doug Snider)

Question: Are there other trees beside Yew which would be bad for cattle?  
Many ornamentals are potentially harmful. The list is extensive therefore it is best not to feed green waste to cattle. Additionally, cattle are classically poisoned by cherry and other Prunus spp. fruit trees if leaves are available (fallen branches in wind storms etc.) due to CN content. There are many others potential issues depending on the type of tree. (Doug Snider)
Question: Is baling corn stalks an option? If so, how do you go about?
Baling corn stalks after harvest will be much needed for cattle feed and bedding across Iowa. Check with your Regional Beef Specialist at harvest. Based on early sampling, we may be recommending testing of the most drought stressed fields. (Dan Loy)

Question: Is it possible to get the diphenylamine reagent for use by veterinarians, crop specialists, etc.?
The ISU VDL is providing diphenylamine for ISU extension agents and Veterinarians on a case-by-case basis at no cost to aid in drought relief efforts. We discuss the test application with the user at that time. Please call (515) 294-1950. Ask for Dwayne Schrunk or the Toxicology and Nutrition group. (Doug Snider)