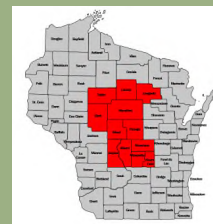


Extension Central News



Fall Edition 2023

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EXTENSION CENTRAL NEWS

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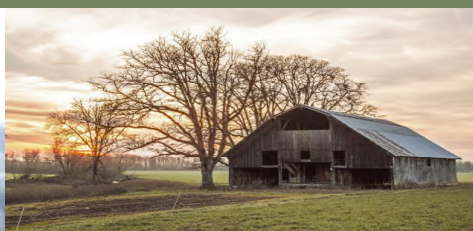
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Cover crop considerations and management after corn silage

Written by [WILL FULWIDER](#)

A recap of the Badger Crop Connect webinar on July 26, 2023

Key takeaways:

- Spring barley and oats are good options as “starter” cover crop species
- Winter rye provides coverage through the spring
- Will need to adjust manure-N credits when using winter rye
- No real value in seeding winter rye above 60 lb/ac
- Nitrogen is lost from fall-applied manure due to leaching. If it will be lost anyway we might as well tie it up in cover crop biomass.

Do cover crops do what we think they are doing?

Whether it’s reducing nitrates leached to groundwater, phosphorus to our water bodies or increasing soil organic matter and microbial biomass, the answer is generally yes. But in trying to integrate cover crops into a cropping system, what are the considerations–species selection, seeding, benefits and drawbacks–that need to be addressed along the way?

One key use may be nutrient uptake and reduced nitrate leaching from fall-applied manure. Dr. Matt Ruark and his lab tested several common cover crops planted after corn silage, including barley, annual ryegrass, and winter rye at Lancaster, Arlington, and Marshfield agricultural research stations to determine their nitrogen uptake and effect on following corn crop yield.

The good: While all the cover crops scavenged nitrogen that would have leached from the manure, winter rye was the obvious winner in preventing leaching.

The bad: In the case of winter rye, the corn took a yield hit and the amount of nitrogen required to hit the economic optimum nitrogen rate was higher than the non-cover cropped control, meaning that more nitrogen was tied up than would have otherwise leached from the fall-applied manure. Furthermore, as biomass of the rye increased, more nitrogen was required to reach similar yields as the non-cover crop control. These findings affect the manure credit in the spring that you can take from fall-applied manure.

Cover crop biomass (lb/ac)	Estimated N uptake (lb/ac)	Amount to adjust manure N credit (lb/ac)
<1,000	<25	No adjustments needed
1,000–2,000	25–45	Subtract 35 lb/ac from manure N credit if winter rye was used*
>2,000	>50	Do not take any manure N credit**

*There was no clear effect when winterkilled cover crops were used based on Wisconsin research

**This recommendation applies to manure N applications up to 100 lb/ac of available N

To avoid nitrogen tie-up and yield drag with winter rye—as the nitrogen is not returned to the soil in that growing season—terminate the rye as early as possible in the spring. Not much value was seen in increasing the seeding rate of rye beyond 60 lb/ac, other than tying up more nitrogen at planting. Even at lower seeding rates, soil coverage was more than 75% due to increased tillering. Rates could even be dropped further to save on seed costs while still achieving conservation goals. Finally, in years of dry conditions or drought, cover crops can take up water that the following crop needs as well, depressing yield potential. This can also be mitigated by terminating early.

Storing Drought Affected Grain

Written by Sam Bibby

If your corn or beans suffered from the drought this growing season you are probably ready to be done with 2023 and ready to plan for 2024. However, if you store grain on your farm you shouldn't forget about the 2023 crop going through the dryer or sitting in the bin. Preservation and optimization of grain stored on the farm, especially drought-affected grain, can greatly affect the dollars paid at the elevator this coming winter or spring.

Drought affected corn should be handled as carefully as possible. It is usually low in test weight and easily damaged compared to well filled corn kernels. To preserve test weight, consider drying corn slowly with low temperatures if possible. Low-test weight corn dried at 220°F is on average 1.5 pounds per bushel lower in test weight than corn dried at 70°F. The result is a savings of around 4.5 cents per bushel in dockage fees.

Drought affected corn is prone to stress cracks and when moved through grain handling equipment can break causing many fines in the grain. The fines plug up gaps between kernels in the bin preventing adequate airflow, which, eventually results in moldy or rotten corn. Fines also act as a glue creating grain removal problems later in the season. To avoid this issue, clean the grain as it enters the bin or consider “coring” the grain bin immediately after filling. Cored grain should be cleaned, fed, or sold to a feed mill.

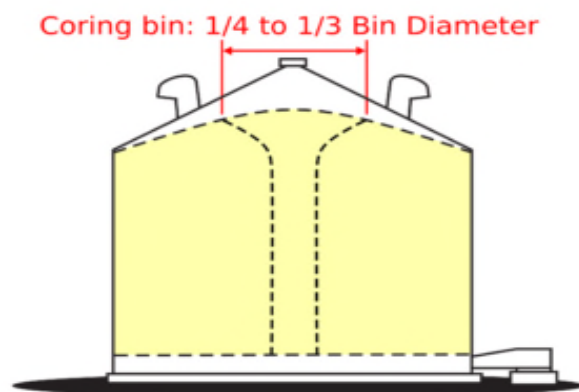


Illustration from James Dyck and Field Crops News

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Soybeans affected by drought may dry down earlier than expected and many growers may be stuck harvesting soybeans below the standard 13% moisture. This is a bigger problem than many farmers realize. When you deliver beans to the elevator, you may be docked if they are too wet, but you will not be paid more if they are too dry. If you sell 10,000 bushels of soybeans at 10% moisture rather than 13% with a price of \$12 per bushel, you are effectively missing around \$4000 (calculated using the inverse shrink factor).

Adding water to grain to increase moisture is illegal in the US. However, there are a couple of strategies to avoid or counteract this problem. The easiest and least risky is to harvest on time when possible. Not only will this avoid the lower moisture levels, but also you are less likely to experience as much shatter loss from the combine header. If beans were harvested too dry, you may consider reconditioning them to add moisture and avoid missed revenue. This is done by turning on bin fans during the right weather conditions to slowly humidify the soybeans. Soybeans will reach an equilibrium moisture of around 13% when exposed to air with an average relative humidity of 70%. This process poses several risks, the greatest of which is bin damage due to expanding grain and the subsequent nullification of any warranty left on the bin. Another risk is over conditioning soybeans, which increases their moisture too much resulting in mold and rot along with other problems. While this process is risky, it can certainly pay off when considering the loss in profit calculated above. Some of the best resources for reconditioning soybeans safely come from Dr. Ken Hellevang a Professor and Extension Engineer at North Dakota State University (NDSU). Full instructions and safety considerations can be found in the NDSU soybean production guide at <https://www.ndsu.edu/agriculture/sites/default/files/2023-01/a1172.pdf>.



Insights Gained from New Summer Event Series at Hancock

Natasha Paris 9/23

The sandy soils of Central Wisconsin are a unique growing environment that provide their own benefits and challenges. Fortunately, the Hancock Agricultural Research Station is situated in our region and has the capacity to carry out a wide range of research that benefits agriculture here and around the world. While the annual potato field day provides insight into some of the larger projects surrounding potatoes, there are many other projects happening all the time. In order to show off the breadth of things being learned and developed at Hancock, this summer I launched the Hancock Highlight Series with the staff at the Hancock station. This series of mini-field days allowed attendees to take a deep dive into the research of one or two professors from UW-Madison at a time and led to interesting discussions about applications and innovations involving this work.

The first event happened in late June and featured Dr. John Jones, a researcher in the Soils department. He is looking at the effects of P & K deficiency, and there are plots that have had no P or K applied for several years. While in this drought year there was a lot of potassium deficiency seen on non-irrigated ground due to lack of water moving through the plant, we didn't see that at Hancock under irrigation. One theory was that due to potassium's ability to leach to groundwater the irrigation water may have enough K in it to be preventing signs of deficiency.

The next event was in late July and focused on nitrate and leaching. One study we looked at was under the direction of Dr. Francisco Arriaga in which a new lower-cost lysimeter had been developed and was installed under several plots and treatments at Hancock and Arlington, to more easily be able to collect leachate from an area and see how it changes throughout the season. These lysimeters had just been installed and will continue to be used through a rotation of crops to collect a robust set of data about nitrate leaching. In a fascinating evolution of research, Dr. Jingyi Huang's group showed us a new low-cost sensor they had developed which will hopefully be able to monitor and provide nitrate data in real time. They are currently testing it with sensors at several depths in the profile to see if the results make sense and if the sensors hold up under field conditions. The implication that someday we could monitor soil nitrate from an app on our phones is exciting and could provide lots of insight for nitrogen management going forward.

The final event was held in late August and had to be postponed a week due to the extreme heat. This event featured three shorter talks. First we visited a plot of silphium, a perennial sunflower being studied by Dr. Valentin Picasso in pursuit of creating commercial agriculture systems that involve more perennials for drought resistance, carbon sequestration, and soil health. Dr. Picasso also talked about Kernza, a perennial relative of wheat that can produce either forage or grain. Next, we visited the plots of Dr. Yiqun Weng, a cucumber breeder who grows varieties of cucumbers from all over the world to look for traits that can be helpful in commercial cucumber markets. There were many varieties of cucumbers that looked nothing like what we typically think of, so it was interesting to see the biodiversity of what is thought of as a pretty uniform crop. Finally, we talked about accounting for nitrate in irrigation water with Dr. Yi Wang, and how the drought may have increased the nitrate in groundwater due to lack of replenishment so it should be tested and accounted for when calculating your nutrient budgets this season. Dr. Wang is also looking at nitrogen optimization in potatoes and beans to reduce any potential impact on groundwater.

The Hancock Highlight series is a great opportunity to bring together stakeholders from across the agriculture community. If there is a topic you would like to see discussed at a future event, please let us know. Thank you to the staff at the Hancock Ag Research Station for making it possible. Be on the lookout for future dates in the 2024 season, hope to see you there!

Feeding Snowballs this Winter?

Managing a short forage inventory.

Matt Lippert

Clark and Wood County Dairy Agent

Through June and July much of Wisconsin experienced a flash drought. Soil moisture went rapidly from adequate to dry. By August, it was clear many areas were unable to catch up. Depending on where the summer storms popped up, there were winners and losers. Soil type helped some, but if there is no rain at all, there isn't a soil heavy enough to compensate for that.

Forage production has been cut statewide, some were lucky and spotty rain and relatively cool nights allowed for corn development. Even where the corn pulled through much less haylage was made across all cuttings. Pastures have needed to be supplemented or cattle sold off because of the shortage. Since corn silage is an end-of-season crop, many producers can harvest corn that was intended for grain to compensate for a shortage of hay crops. That is an excellent strategy, one of the best in fact. Let's consider how bad the problem can still be:

Some dairies routinely harvest all of their corn for silage, there are no flex acres to divert from grain.

If haylage is short and the corn silage yield is way down due to drought stress, it will take many more acres of corn to fill the bunker, accounting for the lower yield in both hay and corn silage.

On the plus side:

Inventories were adequate going in to 2023

Due to dry weather, most crops were planted in a timely manner

Forage quality has been good.

What to do?

If you are forced to make an adjustment, do so immediately so the change can be less severe, accurate inventories are required. Tools for calculating inventory or for purchasing forage can be found at: <https://livestock.extension.wisc.edu/decision-tools-and-software/>

If you found some emergency feed, CRP acres, usually idle ground, and the quality is low, allocate to replacement animals, supplemented with concentrates to get the energy adequate or include at a low level into the lactation diets.

As you read this, emergency alternative opportunities have passed, such things as growing drought tolerant sorghums, or August seeding of oats for fall harvest. Harvesting soybeans for silage may still be an option. Seeding triticale or rye or other spring harvested mixtures may give you more forage earlier next spring than if you do not grow winter annuals.

Do everything possible to minimize shrink, this should always be the case.

Since the drought, and subsequent forage shortage began, there have been reasonable opportunities to contract corn and byproducts such as corn gluten feed, distiller's grain and other high fiber feeds at reasonable cost. High fiber feeds, can replace forage fiber, extending your forage inventory. Thank weak exports and much of the rest of the country having better growing conditions that reasonably priced alternatives have been available. Other high fiber, forage extending, byproduct feeds: soy hulls, cottonseed, wheat middlings

Continued....

If corn didn't pollinate well, starch may also need to be extended not just fiber, in addition to the byproducts already mentioned consider whey to replace starch.

We couldn't predict the drought this year, you never can, a good idea is to insure crops and dairy margin.

This is probably not the year to push for high forage diets! There is a broad range of forage inclusion in dairy diets and it can easily go below 40% forage if the type and amount of fiber is adequate.

A combination of the above will get you there. Dropping the herd size, even just 1-2 % will often not reduce milk production, because of cows adjusting favorably to less crowding. Reducing replacement herd as it is often the case there are more than needed, Increasing the amount of purchased feed, and the fiber level of that purchased feed (byproducts), increasing the concentrate in the ration, usually will not harm animal performance especially if the adjustments are spread out over the entire year. Feeding some other feed, not usually seen, be it emergency seeded crops or CRP hay, can help if it is allocated to the right group and used in moderation.

If you have to purchase corn that you were supposed to grow, I feel this will be more economical than purchasing hay from out of state, but in either case, purchasing feed that you hadn't intended will probably get your banker's attention. Tell them your plans first, they have heard there was a drought this year.

**We are still in need of farms for both studies.
Please let us know or sign up below if you want to participate.**

Colostrum Management Study

This study aims to determine the colostrum management practices between dairy replacement heifer calves and beef x dairy crossbred calves. Dairy-breed bull calves would also be sampled if available.

Jugular blood samples will be collected from calves 1-7 days old to measure serum IgG levels, an indicator of the success or failure of transfer of passive immunity from colostrum feeding. UW-Extension staff will visit the farm to collect samples 1 - 2 times per month for a year. All size farms are welcome to participate in the study as long as they can provide 6 - 12 heifers, and 6 - 12 crossbred calves. We will determine the number of visits needed based on the farms calving schedule. Participating farms will be asked to provide information on overall colostrum management practices and a brief questionnaire on each calf in the study (birthdate, assisted vs unassisted calving, time of colostrum feeding, etc.). Extension staff will coordinate with each farm the best time to visit and to find times when

farm staff can help identify calves eligible for sampling.

This study runs from Sept 1st, 2023 - August 31st, 2024. Afterward, participating farms will receive a report indicating what percentage of their calves ranked Excellent, Good, Fair, and Poor for transfer of passive immunity. All farm information will be kept confidential and anonymous.

Milk Quality Study

Prototheca bovis is a new mastitis-causing pathogen with little known about its prevalence on Wisconsin Dairy Farms. UW-Extension is seeking farms to participate in a year-long study to help identify the prevalence of *Prototheca bovis* in Wisconsin. UW-Extension educators will coordinate with farm personnel the best time to stop in to collect milk samples quarterly on 10 random animals. Quarter samples will be collected aseptically and cultured for *Prototheca bovis*. Samples will also be submitted to Marathon County DHIA for somatic cell counts. The goal is to collect samples from 40 animals over the course of a year.

This study is planned to run from Sept 1st, 2023 - August 31st, 2024. Participating farms will receive information on the presence or absence of *Prototheca bovis* mastitis on their farm, along with the somatic cell count of the sampled animals.

Biosecurity In the Feedlot

Bringing new calves to the feedlot is stressful for them due to transportation, adjusting to a new home, changing feed, exposure to disease, and establishing social order with new cattle. Minimizing both clinical and subclinical disease in feedlots is essential for producers to improve profitability. Biosecurity practices producers implement can help reduce the risk of disease outbreak and spread within their operation.

Getting Newly Arrived Cattle Off to a Healthy Start

Maintaining the immunity of the newly arrived cattle involves many health and nutrition management practices. Here are some tips on how to build immunity to diseases within your operation:

- As much as possible, fill your feedlot with pre-conditioned animals and ask for their health and feeding histories. Preconditioned calves should have been vaccinated to build their immunity to common diseases. They should also be familiar with eating from a bunk and drinking from a waterer which should help them better adapt to eating at their new home.
- Work with your veterinarian to set up receiving vaccination and metaphylaxis protocols. Knowing their incoming health history and origin is helpful to establish receiving protocols. This is where a good veterinary client-patient relationship (VCPR) can pay off. Visit [Recognizing and Managing Differences in Health Risk of Incoming Feeder Cattle | UNL Beef](#) for more information.
- Fill the pen quickly (within one week) to establish a feeding group. Do not introduce new additions to this group as doing so disturbs the prevailing social balance and pen immunity.
- Source animals of similar size and age to feed, vaccinate and medicate as a group.
- Purchasing heavier calves (>600lbs.) may decrease chances of death loss and overall morbidity.
- Work with your nutritionist to set the receiving diet and subsequent rations. The animals' nutritional requirements must be met in order for the immune system to function correctly. Improperly fed cattle are more likely to become sick and they will take longer to recover from disease.
- Do not overstock pens on arrival and make sure cattle have access to fresh hay and water with 18 – 24 inches of bunk space. Young calves prefer to eat as a group; therefore, everyone needs access at the same time. Clean, dry resting space is also needed.
- Weigh incoming cattle. A scale in the chute or alley ensures that accurate doses of animal health products are administered. Accurate weights are also helpful for determining nutritional needs. Weights are needed for calculating close-out



Photo source: Pixabay.com

information so you may determine the profit or loss from feeding each group.

- Use low stress handling practices and acclimate cattle to their caretaker(s). Doing so helps build their trust, so it is easier to identify problems sooner. Remember cattle are prey animals and they will hide their illness from you. Treatment outcomes are generally more successful when diseases are treated early, near to their time of onset.
- Separate incoming cattle from the existing herd. This means not allowing nose-to-nose contact with existing animals on the operation for 21-30 days. Remember that shared fence lines and waterers between pens provides nose-to-nose contact and can be avoided by physically separating the pens or using solid fencing between pens.
- Routinely clean and disinfect all equipment used to administer animal health products. Learn more about syringe and needle care at [UW-Madison Livestock Extension](#), [Cleaning and Sanitizing Multi-Dose Syringes and Transfer Needle](#) article.
- Handle sick animals last to reduce the risk of spreading disease to the healthy cattle.
- Work with your veterinarian to establish treatment protocols that allow sick animals to stay with their feeding pen when practical. This minimizes the additional stress of adjusting to the hospital pen and re-adjusting to their home pen after their condition improves.

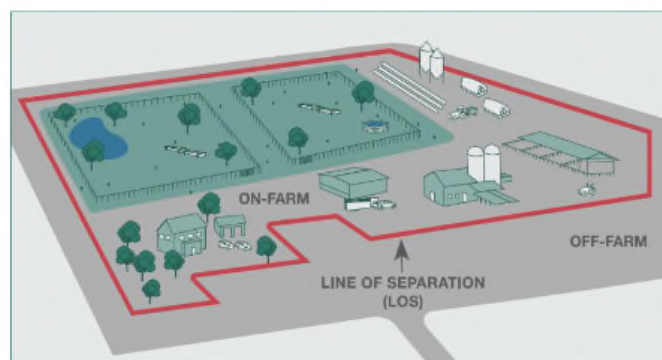
Traffic Management

Farm visitors, advisors, service personnel, and deliveries of feed, fuel and numerous other inputs have the potential to bring disease agents onto the operation. Feed trucks, mixer wagons and people may also move pathogens around the farm. Managing all these movements can help prevent and reduce disease risk. Tips for managing traffic include:

- Map out lines of separation and specific traffic routes for various tasks at the facility to separate off-farm and on-farm traffic. Example mapping templates are available from the Center for Food

Security and Public Health, [Protecting the Herd/Flock: Line of Separation](#).

- Designate receiving areas for feed, supplies, and cattle deliveries to reduce traffic throughout the operation. For the same reason, mortalities should be picked up near the entrance of the operation.
- Post entrance/exit, parking, and movement signs. Make it easy for people to see where they should go.
- Use logbooks recording visitors' names, when they arrived, when they left, and purpose of visit. Everyone must understand that they are expected to follow the operation's biosecurity protocol when visiting. Information found in the visitor log will become valuable when confining a disease after it breaks on your operation.
- Limit visitors' access to areas where feed is prepared, cattle pens, feed bunks, and handling facilities.
- Either provide disposable covers or require all visitors to disinfect their footwear before entering animal areas. Workers should also sanitize their footwear between feeding pens, and before and after leaving processing and hospital areas. Properly maintain boot wash stations as described in [Cleaning and Disinfection on the Farm](#) and [Cleaning and Disinfection Biosecurity Tip Sheet](#).



Protecting the Herd/Flock: Line of Separation

Sanitation and Maintenance

Routine pen cleaning helps with both biosecurity and animal performance. In addition to improving biosecurity, cleaning, washing, and maintaining equipment will help extend its useful life. Regular cleaning will also help identify maintenance problems and safety.

- Using separate equipment to handle feed and manure is ideal and they should be stored far enough apart to prevent cross-contamination.
- Dedicate buckets, loaders, and other equipment (if practical) to specific tasks and areas to decrease the risk of spreading disease.
- Scrub small equipment and waterers (water tanks) with soap and water. Rinse with clean water. Follow the cleaning product's label directions for use and adhere to all precautions.
- Clean and bed pens as needed to keep cattle clean, with minimal tag deposited onto their hides, and mud/manure depth kept to less than ankle deep. For more information on desired tag levels visit this [mud and manure scoring factsheet](#).
- Ideally, pens are thoroughly cleaned of all debris and allowed to sit empty seven to 10 days between feeding groups. Hospital pens should also be cleaned, washed (if feasible), and allowed idle time for as long as possible.
- The cattle handling equipment and processing area should also be cleaned routinely to reduce risk of spreading disease.
- Power wash, when practical, as needed and only if there is good drainage and ventilation. Power washing aerosolizes potential pathogens and workers should wear eye and respiratory protection when using a power washer.
- Scrub or power wash feed and manure handling equipment as needed to prevent the build-up of debris that can harbor pathogens.

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Pest Management

Starlings, pigeons, other birds, rats, mice, cats, dogs, raccoons, and other wildlife can carry and spread diseases that pose a threat to your feedlot. Along with spreading disease, they can consume substantial amounts of feed. According to an USDA-APHIS report, "A flock of 1,000 starlings using a CAFO for 60 days during winter will eat about 1.5 tons of cattle feed, representing a loss of \$200 to \$400 per 1,000 starlings." Good sanitation and strategic use of pesticides can help manage these pests.

- Minimize spilled feed and keep feed alleys and storage areas clean.
- Promptly remove waste feed and do not allow it to build up under bunks.
- Limit cover for rodents and wildlife by mowing grass and weeds and laying stone or pavement or concrete around feed storage and feeding areas.
- Follow the label for all pesticides being used. Some pesticides are only available for use by a certified applicator.
- Contact local USDA Wildlife Services or other animal/pest control services to assist in the control of wildlife.


In Summary

Getting cattle off to a good start in the feedlot is important to capitalize at the end of the feeding period. Minimizing cattle stress that comes with changing feed, exposure to disease, and new social groups is critical. Paying attention to biosecurity practices throughout the entire feeding period can help mitigate the introduction and spread of disease. Controlling traffic, performing routine maintenance, and reducing pests are biosecurity efforts producers can practice reducing the risk of disease outbreak on their operation.

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What is the value of reducing erosion?

Richard Halopka, CCA
Senior Outreach Specialist, UW-Madison Division of Extension

University of Wisconsin Soil Scientist Francisco Arriaga has determined it will require a minimum of 180 years for nature to reproduce 1 inch of topsoil. Topsoil that encompasses an area of one acre (43,560 square feet) at a depth of 1-inch weighs 164 tons. Arriaga determined the value of soil lost from erosion at current fertilizer prices equals \$8.80 per ton. An acceptable soil loss is 5 tons per acre. Visualize the thickness of a dime across one acre, that depth equals 5 tons per acre and a \$44 per acre loss. If soil eroded at the depth of 1 inch across one acre the value of nutrients lost would be \$1400 per acre and require 180 years to be restored. This is just the loss of nutrients and doesn't consider the loss of soil structure or soil biology.

The basics for improving soil health are providing food, shelter, and an environment that will allow the soil critters to multiply and flourish. Diverse rotations that include annual and perennial crops, plus the addition of cover crops will provide live roots in soil for a greater period. This will help stabilize soils preventing erosion and provide food for your soil critters. Reducing tillage will improve soil structure and prevent reductions in your soil critter population. Residues will feed soil critters, protect the soil surface from rainfall impact, and improve water infiltration, slow water runoff, and moderate soil temperatures. Integrated pest management will reduce the use of pesticides. Pesticides may be used when an economical threshold is attained, protecting natural predators and your soil critters. Nutrient management will account for available on farm nutrient credits (manure and legume), potentially reducing purchased fertilizer.

Improving soil health is a journey not a destination and will require the due diligence of farmers for many years. The goal is to leave the farm (soil) in a better condition than the day you began.

If you have questions on improving soil health or crop production, please contact richard.halopka@wisc.edu or 715-743-5121.

Step Into Biosecurity with Clean and Disinfected Boots

By Sandy Stuttgen, DVM

Extension Taylor County Agriculture Educator

Keeping your livestock safe from microbes, including bacteria, viruses, and fungi, is the biosecurity goal that all farms should have. Wearing clean, sanitized footwear helps meet this goal as foot traffic moves microbes to and around the farm. Help visitors and those who work on the farm know the paths for limiting the spread of microbes between animal groups by posting signs to designate all entrances, parking, and travel routes. Limit animal contact by visitors; both visitors and personnel should wear clean clothing and boots in animal contact areas.

All footwear should be cleaned and disinfected before entering and after contacting animal areas. To make it easier to accomplish, maintain boot wash/disinfection stations by providing water, buckets, a brush, soap, and disinfectant at animal area entrances and exits. Begin by rinsing with water to remove all debris while paying special attention to remove everything packed into the sole's tread. Next, scrub the cleaned footwear with soap and water while following the product's label directions for dilution rate, water temperature, and water hardness.. The soap acts to remove remaining debris and microbes. The desired outcome is to disinfect a clean surface, not to disinfect dirt. Follow soap washing with clean water rinsing as disinfectants are inactivated by soap residue.

Finally, apply the disinfectant as the label directs and for the contact time as indicated by the product label. Contact time is the amount of time the disinfectant needs to remain in contact with microbes to kill them. Contact times range from 3-10 minutes depending on the product. It takes time for disinfectants to work and not adhering to that time only serves to put any remaining microbes in solution, increasing the ability of spreading them around as you walk. If disinfectant is applied in a boot bath, make sure to start every day with a fresh solution and to change it when it becomes visibly dirty during the day.



Figure 1: Applying water with a nozzle is helpful for removing debris from threads, but this can also be



Figure 2: Pay special attention to scrubbing the threads with soap and water to remove all debris.

Corn silage opportunities and considerations for drought-stressed corn

Written by [WILLIAM HALFMAN](#)

Beef cow-calf producers are feeling the pinch of low pasture and hay yields due to drought conditions across the state. Corn silage is another feed source that can be used to help meet the herd's nutritional needs.



Harvesting corn silage, photo by Katie Wantoch

Test for toxins before feeding

The drought has negatively impacted many corn fields that may be candidates to chop for cattle feed. Increased risk of high nitrates and mycotoxins in these fields means caution needs to be taken. Nitrate accumulates in the lower portion of the stressed corn plant and is converted into nitrite in the rumen, or if the fresh chopped corn is allowed to heat in a pile. Nitrite then affects the oxygen-transporting capability of the animal, causing asphyxiation (suffocation). Corn stressed during ear development and pollination is also susceptible to mold and mycotoxin development. Mycotoxins can cause reduced feed intake, diarrhea, abortions and weight loss. Both nitrate and mycotoxin levels can be tested for so appropriate action can be taken to keep risk to a minimum. The cost of the tests is minimal compared to the lost value of potential dead cattle and production loss, especially with the current high cattle prices.

Drought stress impact on yield

Drought stress tends to impact yield more than quality. UW Corn Agronomist Joe Lauer evaluated yield and quality data from the UW Corn Silage Trials to determine how drought stress impacted yield and quality of corn silage.

In years where the drought stress was only prior to pollination, forage yield tended to be lower compared to normal years and grain yield was not affected. Corn plants were shorter but had a greater proportion of grain in the silage, resulting in lower neutral detergent fiber content and greater starch content.

In years where the drought stress extended into pollination and grain fill, forage yields were 18 -46% lower. Quality, measured by using the Milk Per Ton quality index, was reduced by 3-8%. The silage had a lower starch content due to lower grain content.

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Forage quality and drought-stress

Wisconsin research led by Jim Coors evaluated the forage quality of corn with 0, 50 and 100% pollination of the kernels on an ear in Wisconsin in 1992 and 1993. As ear fill increased from 0 to 100%, whole plant crude protein decreased by 1%, neutral detergent fiber decreased by 8%, acid detergent fiber decreased by 4%, and in vitro true digestibility increased by 3%. These years were not drought-stress years, however, the treatments mimicked drought stress during pollination and ear fill and the results were comparable to what was reported by Lauer.

Following are some management practices to follow when feeding drought-stressed corn silage:

- Check with your crop insurance agent to determine how that may influence coverage and what evidence may need to be preserved for yield determination.
- If cutting earlier than normal, or a field not initially intended to be harvested for silage, follow pre-harvest intervals of pesticides that were applied to the crop.
- Nitrates are highest in the lower part of the plant, raising the chopper height to 8 to 12 inches will reduce the amount of nitrate in the harvested material, this is especially important if feeding it as green chop.
- If feeding green chop, only chop enough that the cattle can get it eaten in about 2 hours, so it does not heat. It may be necessary to feed cattle twice a day to avoid feed heating.
- If it rains enough that plants re-hydrate, delay harvest for at least 3 days after the rainfall event as the rain causes an increase in nitrogen uptake in the plant. After 3 days the nitrogen should be converted to plant protein. Testing for nitrates would be good insurance to know what you have. This is especially important if feeding as green chop.
- Ensiling the crop can reduce nitrates by 40-60% if allowed to go through a 21-28 day fermentation period before feeding.
- Increased nitrate concentration in the plants increases the risk of silo gas. Information on silo gas and safety precautions can be found here: [Silo Gas and Silo-Filler's Disease – Team Forage \(wisc.edu\)](#)
- Corn silage with high nitrates and or mycotoxins can be diluted with non-affected feed to reduce the total nitrate or mycotoxins levels of the rations to safe levels.
- Options for corn silage storage including upright and horizontal silos, bags, etc. Ideally, removal rate should be considered when sizing the storage structure to minimize risk of spoilage at the feedout face. Recommended removal rates are a minimum of 4-6 inches per day in winter and 6-12 inches per day in summer.
- Take steps to ensile the silage at the correct moisture for good fermentation and feed quality. Drought-stressed and hail-damaged corn are difficult to determine when to begin checking whole plant moisture for harvest timing. Visual appearance can be misleading.
- This year, some fields have big differences in emergence, and it may be necessary to harvest in sections rather than the whole field.
- Corn silage, including most drought-stressed corn silage, will need to be limit fed or included in a ration with lower quality forage to beef cows to prevent over-conditioning. It may require protein supplementation to meet cows' needs. Work with your nutritionist to make sure cows' needs are being met.
- Make sure there is plenty of bunk space, 30 inches per head, if limit feeding to make sure all cows can get access to the feed. In addition, separating the young, old and more timid cows from the others can be to their benefit.

In summary, drought-stressed corn is an option to meet feed needs for beef cattle. Care should be taken to minimize potential risks and optimize it's use. Correctly harvesting and storing corn silage combined with balancing rations based on feed tests and good bunk management will help efficiently use limited feed resources and get the most value for the money.

Use the proper syringe and needle when vaccinating cattle

Written by [Sandra Stuttgen](#)

Using the right tool for the job generally promotes a better outcome; for example, butter knives are not the best tools for cutting wood. Using the right equipment when vaccinating your cattle also requires the right tools. The correct syringes and needles must be used in addition to a well-designed and functioning headgate to restrain cattle so injections may be safely administered in the neck area.

Administer accurate dosing through proper techniques

Use sterile disposable, or clean, heat sanitized multi-dose syringes that are sized to accurately deliver the correct dose. Filling a 12-cc disposable syringe once to deliver 2-cc doses to six animals will not accurately deliver the correct dose to each animal. Inaccuracy is magnified when using larger syringes. It's best to draw and administer a single dose for each animal when using disposable syringes.

Test multi-dose syringes before use

Changes due to wear or damage of multi-dose syringe working components will cause under- or overdosing. Before starting, and periodically when vaccinating, fill the syringe with distilled water and discharge the doses to verify the correct number are delivered. Either adjust or replace syringes that malfunction. Adjust the plunger's tension to prevent leakage.

Continuous-feed syringes reduce the chance of contaminating the vaccine, but it is hard to keep the bottle, hose and barrel sheltered from UV light, heat, or freezing temperatures that harm the vaccine. Continuous-feed syringes are better used for less sensitive products like dewormers.

Needles are single-service items. Select them for gauge and length to match the animal's weight, and the product's intended placement and viscosity. Download and use the accompanying chart to help with your selection.

- Use a short needle (1/2 – or 3/4 – inch) for products labeled for subcutaneous (SQ) to reduce risk of unintentional intramuscular (IM) placement. Accidental IM placement can interfere with produce effectiveness and may cause significant pain and tissue irritation..
- Use a longer needle, 3/4 – to 1-inch, to deliver the IM product while avoiding placement in the subcutaneous layer.
- Avoid underdosing due to injecting through the skin tent when trying to deliver a SQ product.
- Avoid product leaking from a hole made by a needle gauge that was too big.
- You won't be able to push a thick product through a larger gauge needle; remember, the diameter of the needle decreases as the gauge number increases.
- 18 or larger gauge needles that are 1 ½ inch or longer are more likely to bend than shorter, smaller gauge needles.

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Avoid needle bending and breaking for quality and safety

Replace bent needles because bending weakens them, and they will more easily break. Immediately remove needles that have broken off in the animal. Packers reported routinely finding broken needles in the 2022 National Beef Quality Audit and the packers' customers also reported finding broken needles in purchased product. There is no justification for jeopardizing the safety of plant workers and consumers! Mark the location of the broken needle in the animal's health record and have that animal processed by a smaller/local processor, informing them of the hazard so they can carefully trim that area by hand.

Dispose of needles properly

It is also important to properly handle and dispose of used needles. Injuries from needle sticks are common for veterinary healthcare workers and should be avoided. Keep needles capped and avoid placing them in your pockets or mouth. Use care when uncapping and re-capping them. Dispose of them in bio-safety containers designed for this purpose or use a hard plastic sealable container that is clearly marked as hazardous and check with your garbage pick-up or landfill about their policies for accepting used needles. Local pharmacies or human or veterinary clinics may also accept used needles for disposal.

Properly designed equipment is available and reasonably priced. You already have a lot invested by the time you are working cattle through the chute. It costs more and leads to unintended consequences when using the wrong tools to vaccinate cattle.

Download and print the following needle chart

Length for Route of Administration	Recommended Needle Size								
	S Q Tented Technique 1/2 to 3/4 inch			I M 3/4 to 1 inch			I V 1 to 1-1/2 inch		
	Cattle Weight			Cattle Weight			Cattle Weight		
Needle Gauge for cattle weight and product viscosity	>300	300-700	>700	>300	300-700	>700	>300	300-700	>700
Thin (i.e. most vaccines)	18	18-16	16	20-18	18-16	18-16	18-16	18-16	16-14
Thick (i.e. thick antibiotics)	18-14	18-14	16-14	18-16	18-16	16	18-16	18-16	16-14

USE THE SMALLEST PRACTICAL NEEDLE WITHOUT FEAR OF BENDING.

Change needles often to reduce tissue irritation, after 5-10 uses, or as you refill the syringe.

Never market an animal containing a broken needle through high-volume channels; the recommendation is to harvest at a small/local processor and inform them of the needle.

Citation: Beef Quality Assurance National Manual. 2019 Cattlemen's Beef Board and National Cattlemen's Beef Association.



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Are you ready to haul cattle?

Written by [WILLIAM HALFMAN](#)

This article was originally published in the [Wisconsin Agriculturist](#)

The frequency of hauling cattle varies from farm to farm. Some farms haul on a regular basis and others only a few times a year. In either situation, breaking down alongside the road – or even worse, in a traffic crash – while hauling cattle is not on anyone's bucket list. Making time to inspect and maintain the truck and trailer prior to hauling will help reduce the risk of breakdowns and traffic accidents due to vehicle malfunctions. Being prepared results in lower stress for both humans and cattle.

A study done by the Federal Motor Carrier Safety Administration found that vehicle failure was the critical reason behind about 10% of truck crashes. However, maintenance issues were a contributing factor to many more. According to this study, maintenance issues contributed to nearly 40% of truck accidents. Some of the top contributing factors include failed brakes (29%), tire problems (6%) and improperly loaded trailer (4%).

A similar study by the National Highway Traffic Safety Administration identified tire- and wheel-related problems and brake problems as the top two critical reasons for crashes that were due to vehicle-related problems. This data is only from crashes. Details on leading causes of breakdowns are harder to find because official reporting usually does not exist. Of the limited information available, tires, brakes, electrical and overheating are listed as the most common reasons for ending up with a disabled vehicle alongside the road.

Reduce risk of breakdowns

Following are some considerations to help reduce the risk of breakdowns and crashes related to vehicle failure:

Because tires, wheel assemblies and brakes have been identified as the most common cause of breakdowns and crashes where vehicle failure was the critical factor, it is time well spent to check them on a regular basis.

Tires should have more than 2/32 of an inch of tread depth and should be replaced when that depth remains. Make sure truck and trailer tires are intended for hauling, towing and trailer use, and are not rated as passenger tires. Passenger-rated tires do not have the sidewall strength to get the job done.

Tires not only wear out and need replacement from regular use, but they also crack, dry-rot and become unsafe just from ageing. This can occur faster if they sit outside with direct sun exposure. Don't forget to check the spare tire and make sure you can get to it, along with the jack and blocks, when the trailer is loaded.

Bearings and brakes may also deteriorate from age and sitting. Moisture is the No. 1 culprit, and results in water corroding and damaging bearings, brake parts and structural components. Because livestock trailers are often used in dusty, dirty environments, grit and sand can accumulate in unwanted places and damage bearings and brakes. Some larger trailers have onboard batteries as part of the braking system, and those also need to be checked to make sure they are working correctly.

Make sure the floor is clean and in good repair, and the lights, gates and latches all work as they are supposed to. The list for checking over the truck should also include checking the oil, coolant, radiator, hoses and battery condition before heading out.

It is common for the truck used to pull the trailer to do double duty as the grocery hauler and other chores. Wear happens during those easy tasks and can sneak up on us. That is why good maintenance and pre-trip checks are a must.



Badger Crops and Soils Update Meetings:

Schedule

11/27: Barneveld, Deer Valley Lodge

11/28: Fond du Lac, UW-Oshkosh, Fond du Lac Campus. This session will be broadcast via Zoom as an online option.

11/29: Stevens Point, Holiday Inn

11/30: Eau Claire, Best Western Plus Conference Center

Registration will open in mid-September.



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Holiday Inn Booking Link

For those of you who prefer to make reservations via phone, please call 715-344-0200, press 3, and reference the group name **WI Potato & Vegetable Growers** or refer to group block code **PAV**. You must book under the block.

The room block will expire on **January 28, 2024**.

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Additional information
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