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Special points of interest:

- We are sampling and testing manure for nutrients. If you are interested, contact Teresa, 701-483-2348 or Chris, 701-652-2951**

Fall is Here... Time to Plan

Greetings! Now that harvest is well underway and fall is in full bore, it's important to do some house cleaning. One of those items might be to apply manure to fields.

Many research projects indicate that crops can yield better on fall manure applied soils than spring manure applied soils. The consensus for greater yields is that there is more time for the organic forms of nitrogen, phosphorus, and potassium to mineralize (convert to plant available nutrient forms).

Soil testing, manure nutrient testing, and manure spreader calibration are all needed to ensure proper yield goals. If you want your manure sampled or assistance with manure applications, call Teresa (483-2348) or Chris (652-2951) and we can help you out.

This issue has tips on managing winter feeding areas and grazing corn residue. EPA checked some animal operations and Karl Rockeman of the North Dakota Department

of Health has a recap on that. You may distribute this in any manner you see fit. If you would like to receive future copies, email me (chris.augustin@ndsu.edu) to be added to the list.

We are always looking for different topics to cover. If you have an idea or an article you would like to submit, email it to me and I will accommodate

Thanks for reading,

Chris

Make the Most of Corn Residue

Corn residue can help cut winter feeding costs for beef cattle.

Grazing corn residues is one way to reduce the cost of wintering beef cows in the upper Midwest, a North Dakota State University cattle expert says.

Corn residue left behind after harvest includes the stalk, leaf, husk and cob, as well as downed ears. The amount of downed ears varies with the corn variety, but it can be as much as 3 to 5 bushels of corn per acre, according to Greg Lardy, North Dakota State University Extension Service beef cattle specialist.

Generally, approximately 50

pounds of residue is left on the field per bushel of corn harvested. For example, a producer who harvests 120 bushels of corn can expect about 6,000 pounds of residue per acre (120 bushels times 50 pounds of residue per bushel).

Obviously, the cow will not graze or use all of that material. At most, a cow will be able to graze about 50 percent of that material (in this example, about 3,000 pounds per acre), Lardy says. One acre of corn residue should support a 1,000-pound dry cow for 1.5 to two months. Strip grazing the fields (dividing the field and limiting access using electric fencing) will improve utilization and

allow producers to increase the stocking rate.

The residue portions with the greatest nutritive value include the husk and leaf. The cob is fairly high in digestibility, but very low in protein. The stalk is low in both protein and digestibility.

Cattle are selective grazers by nature. They choose the most digestible and nutritious plant parts first. As a consequence, the longer the cattle graze a particular corn field, the lower in nutrient content their diet will be. This is due to the cattle selecting the higher-quality material first and the loss of

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How to Manage Winter Feeding Areas



Winter feeding cattle.

Photo courtesy of Karl Rockeman

Winter feeding areas are a recipe for mud. These high-traffic areas show the impact of cattle hooves that loosen the topsoil and compact the soil below.

When water and manure are added to the loose soil, a mud hole forms. These areas eventually become terrible places to feed cattle.

“A solution to mud holes during winter feeding is to move the cattle to adjacent cropland,” says Teresa Dvorak, North Dakota State University nutrient management specialist at the Dickinson Research Extension Center. “Feeding cattle on cropland adjacent to the old feeding area is becoming a more common practice in North Dakota. This practice allows cattle to move to the old feeding area for water and occasional shelter, but the feeding takes place out on the cropland. The cropland is sometimes referred to as a sacrifice area but doesn’t need to be if managed properly managed.”

By reducing the intensity of the cattle in one area, producers can mitigate problems, but several issues must be considered.

Cropland adjacent to the feeding area allows the producer to move the cattle off the cropland when it becomes excessively wet. The feeding area also should have easy access to hay yards and a water source.

An adequate area per animal is

needed to avoid overcrowding. In addition, the specific feeding area within the field should be moved frequently to avoid three main issues:

- A heavy buildup of wasted feed: This can cause problems for some no-till drills in the spring and can delay plant emergence.
- The concentration of manure deposited in one area: The manure can be distributed evenly across the field if the feeding area is moved to various areas around the cropland.
- Soil compaction: This can lead to muddy areas and issues with spring planting.

Winter feeding area management also must consider the remaining congregation area and proximity to surface water. Permanent congregation areas around a water access will lead to a concentration of manure.

“Accumulated manure needs to be removed in a timely manner and properly applied to cropland because this non-vegetated area is more prone to runoff and erosion,” Dvorak says. “A grassed buffer area should exist between the non-vegetated areas and surface water. A draw or drainage way running into surface water also should be protected.”

Properly managed winter feeding areas contain the nutrients produced by the operation. Sound management practices can reduce soil erosion, keep

water clean and help improve the environment.

The use of buffer strips also can eliminate pollutants, which can result from excessive concentrations of cattle. In North Dakota, operations that confine cattle for more than 45 days each year in an area that does not support vegetative growth are considered an animal feeding operation (AFO).

The North Dakota Department of Health (NDDoH) monitors animal feeding operations. Such operations are bound by NDDoH AFO rules. Alternative management systems, such as cropland feeding will help producers avoid having their operation fall under the AFO rules.

“Properly managed winter feeding areas can be an asset to livestock producers,” Dvorak says. “Correct management also avoid overused muddy areas.”

More information on the proper management of winter feeding areas is available by contacting Dvorak at (701) 483-2348 or Teresa.dvorak@ndsu.edu

Teresa Dvorak
NDSU Area Nutrient
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Rich Mattern
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“By reducing the intensity of the cattle in one area, producers can mitigate problems, but several issues must be considered”



Using windbreaks improves cattle gains while winter feeding.

Photo courtesy of Karl Rockeman

Manure Nutrient Sampling Project

With harvest underway, many producers are starting to apply manure as a fertilizer. NDSU Nutrient Management specialists, Teresa Dvorak and Chris Augustin want to sample live-stock manures for nutrients. Upon the invite of a producer, Augustin or Dvorak will come to a facility, sample the manure and pay for the laboratory fees.

“We will sample the manure for a producer, but also want this to be an educational event for the producer. We will teach the producer how to sample manure properly and how to determine agronomic manure application rates. We want 100 samples this fall and 100 samples next spring. This project has funding for three years”, says Augustin.

Manure nutrient book values can be used for planning, but manure needs to be sampled to verify its fertility. “On one hand, you can over apply nutrients and might cause an adverse effect to the environment. On the other hand, you might also shortchange yourself the fertility of the manure resulting with reduced crop yields”, says Dvorak.

From cattle to swine to compost to sheep, the project aims to sample various manures types on varying diets and different storage methods.

Cooperating producers will remain anonymous and data collected will be used to create a publication that covers nutrients found in North Dakota

manures. “The book values we have been using for nutrient management plans are from other areas of the United States. We believe that North Dakota producers like North Dakota numbers and this is one project that will do just that”, says Augustin.

For more information or to enroll in this program, contact Teresa Dvorak at 701-483-2348 or Chris Augustin at 701-652-2951.

Chris Augustin NDSU
Nutrient Management Area
Specialist

Ellen Crawford
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“We believe that North Dakota producers like North Dakota numbers and this is one project that will do just that.”



Compost subsample ready to be bottled and sent to a lab for analysis.

Make the Most of Corn Residue

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nutrients due to weathering. Longer-term grazing may require protein supplementation to meet the nutrient needs of grazing beef cows.

Corn residue also is low in most minerals and vitamin A. Producers should follow a good-quality vitamin and mineral supplementation program when grazing corn residue, according to Lardy.

Corn residue can be grazed long into the winter feeding period, provided snow cover does not limit the cow’s selectivity and grazing ability. The length of winter grazing time will vary from year to year. Once fields are snow-covered, the cow’s ability to select the higher-quality portions of the corn residue is limited.

Two factors are the biggest limitations to grazing corn residue in this area of the country. First, many corn fields are not fenced and, second, many do not have adequate water for grazing livestock.

“However, the amount of residue available for grazing and its cost effectiveness should cause beef cattle producers to at least consider this option as one means of lowering the cost of winter feeding,” Lardy says.

Grazing corn residue also may have other drawbacks. One is an increased risk of founder or acidosis if fields have greater than normal levels of downed ears. Gradually adapting cattle to grain prior to turnout into the cornfield may be warranted if high levels of downed ears are present, Lardy says.

Soil compaction is another issue. It’s often cited as a reason for not grazing corn stalks. However, data collected in Nebraska and Iowa demonstrate that this generally is not a major problem and grazing corn residues does not affect subsequent yields negatively.

“Producers interested in reducing the cost of production for their cow herds should seriously consider the use of corn residues for fall and winter grazing,” Lardy says. “It will typically be more cost effective than other forage feeding options.”

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A heifer grazing corn.

Photo courtesy of Carl Dahlen

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Commentary from the CAFO Coral

This past June, I spent a week with two inspectors from the U.S. Environmental Protection Agency (EPA) visiting animal feeding operations (AFOs) in southeast North Dakota. EPA selected the area it wanted to focus on based on the water quality impairments in the area and then identified inspection sites based on Google Earth photos. Of the nine sites inspected, six were already permitted by the North Dakota Department of Health, and three were unpermitted.

The sizes of the permitted operations ranged from 100 to 2000 head of cattle. Also included in the inspections were a turkey operation and a swine operation. All of the unpermitted sites were beef operations containing 100 to 200 head.

Unfortunately, issues were identified at some of the sites. The permitted sites had two common problems: (1) failure to manage the ponds to prevent overflows, and (2) lack of records for soil tests, manure tests and manure application. Some of these sites will be inspected more frequently to ensure they address their problems, and one enforcement action is being pursued because of an overflowing pond.

The unpermitted sites fared a little better. Two of the producers had already taken steps needed to abandon areas draining into the river or were making other minor, needed changes. Only one of the three sites had a significant issue, i.e., manure running off a feedlot area, through a pipe and directly into a stream. This producer will be required to correct the problem.

The Department of Health led the inspections of the permitted operations and will address the identified issues. EPA led the inspections of the unpermitted sites and will follow up with those sites.

In addition to the inspections in North Dakota, there have been a number of EPA enforcement actions against AFOs in other

states, such as Iowa, Nebraska and Kansas. The North Dakota inspections and EPA enforcement actions in other states serve as an important reminder of the following:

- All sizes of livestock operations must prevent feedlot runoff from impacting the quality of our water. This is critical for operations located along a river or stream.
- Permitted operations must manage their ponds properly by land-applying runoff water as needed to prevent overflowing ponds.
- Three important records are needed to show proper agronomic use of manure: soil tests, manure tests and manure application records (e.g., time, location and quantity applied).

If you have questions about the potential water quality impacts of your facility, or you would like to know more about required record keeping and/or land applying feedlot runoff water, please contact the North Dakota Department of Health at (701)328-5225.

Karl Rockeman
North Dakota Department of Health
Environmental Engineer



Manure applied on landscape fabric used to calibrate the manure spreader.

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