

# Nutrient Management News

Volume 1, Issue 1

January 4, 2010

## Special points of interest:

- Check out <http://www.ndsu.edu/nm> for more information.
- Manure Management Workshop January 13th, 2010 10:00 am—2:30 pm Valley City Eagles Club
- Soil Health Workshop January 26th 10:00 am MST Hazen City Hall
- North Dakota Feedlot School January 26-27, 2010 Carrington Research Extension Center

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## A New Source of Information!

Happy New Year's and welcome to Nutrient Management News. This will be a quarterly newsletter aimed to bring producers and technical support staff up to date information that pertains to animal feeding operation's nutrient management plans and environmental issues.

It will contain a compilation of articles and press releases from Extension and Department of Health personnel. Articles may also come from other news sources.

If you wish to receive this, please email me ([chris.augustin@ndsu.edu](mailto:chris.augustin@ndsu.edu)) and you will be added to the list. It is also available on the Nutrient Management Website ([www.ndsu.edu/nm](http://www.ndsu.edu/nm))

Please feel free to contact me about the stories, ideas for the publication, or anything else.

Thanks for reading!

*Chris Augustin*



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## Feeding DDGS results in phosphorus changes in manure



Distillers grain

Phosphorus levels in the manure of swine and cattle can be altered by feeding dry distillers grains with soluble (DDGS), according to recent findings by researchers in Minnesota and Iowa.

Research indicates that by adding 20 percent DDGS to the nursery diet of pigs should result in the greatest reduction in phosphorus (P) in manure, if the diet is formulated based on available P.

According to Jerry Shurson, as extension swine specialist with the University of Minnesota, with DDGS, about 90 percent of the phosphorus present is digestible by the pig. Corn contains about 28 percent total phosphorus, and only 14 percent of that is available to the pig. So when DDGS is fed, there is a significant boost in phosphorus levels that are available. Adding a product, such as phytase, will make even more phosphorus available to the pig and reduce

the amount of P in manure, Shurson says.

The opposite occurs with feedlot cattle, said Allen Trenkle, professor emeritus of animal science at Iowa State University. Grains contain more phosphorus than forages, he explained, adding that in the feedlot, there is going to be more phosphorus in the manure. Feeding DDGS to growing and finishing cattle fed high-corn diets will result in increased phosphorus excretion, he said.

The situation changes again when feeding DDGS to dairy cows. Lactating cows have a high phosphorus requirement, Trenkle said, which means farmers will need to supply supplemental.

-Manure Manager, July/August 2008

## Composting Manure

**“Composting manure is an advantageous nutrient management tool “**

Compost is a mixture of organic residues (manure, animal carcasses, straw, etc...) that have been piled, mixed, and moistened to undergo high heat decomposition.

Composting manure is an advantageous nutrient management tool that reduces manure volume, kills pathogens, and destroys weed seeds. Compost is a soil amendment that not only adds to the soils fertility, but also improves water holding capacity and increases the organic matter. Composting requires routine introduction of oxygen. This can be done by a special compost turner (lower right picture) or by a bucket tractor.

The pile needs to have a carbon to nitrogen ration

(C/N) that ranges from 20:1 to 40:1. Organic residues have different C/N ratios. Beef feedlot manure is around 19:1 and wheat straw bedding is around 127:1. Feedlot manure that has bedding is usually in the ideal C/N ratio range of 30:1. If the ratio is too low nitrogen can be lost and too high of a C/N ratio will lengthen the time to compost.

Approximately 50% of the pore space needs to have water and the rest needs air. Too much water or not enough water will slow the composting process. Water content can easily be determined. If the pile feels like a damp wrung out rag, the water is sufficient. If water drips out, the pile is too wet.

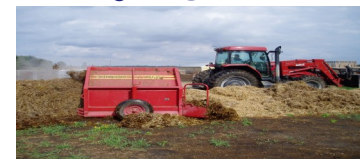
Turning the pile incorporates

oxygen. A pile will usually heat up within 48 hours of piling. Monitoring temperatures is important to determine when to turn the pile. When the pile drops below 110°F the pile should be turned. After 3 or 4 turns the pile should be composted.

The composting site needs to be in an area away from surface waters and where runoff won't reach waters of the state.

For more information contact Chris Augustin at 701-652-2951 or

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Turning Compost

## Managing Winter Feeding Areas



Feeding and watering area

Winter feeding areas are a recipe for mud. They are high traffic areas in which the hooves of the cattle loosen the topsoil and compact the soil below. When water and manure is added to this loose soil a mud hole forms. “An improperly managed winter feeding area is easy to find on many operations and a terrible place to feed cattle,” says Teresa Dvorak, Livestock Nutrient Management Specialist with the NDSU Dickinson Research Extension Center. “This is the area that gets muddy first and stays muddy the longest.”

If cattle are confined in this area for more than 45 days each year and the area does not support vegetative growth the North Dakota Department of Health (NDDoH) considers this an animal feeding operation (AFO). Therefore, the operation is bound by the NDDoH AFO rules. Dvorak says pro-

ducers should consider alternative management of this feeding area to avoid the operation from falling under these rules.

Winter feeding of cattle on cropland adjacent to the old feeding area is becoming a more common practice in North Dakota. This practice allows the cattle to move into the old feeding area for water and occasional shelter, but the feeding takes place out on the cropland. The cropland is often referred to as a sacrifice area, but does not need to become this if properly managed.

When designing or selecting a winter feeding area several items must be considered. Cropland adjacent to the current feeding area allows the producer to move the cattle off the cropland when excessively wet. The field should have easy access to hay yards and a water source. Allow adequate area per animal to avoid overcrowding. The specific feeding area within the field should be moved frequently to avoid three main issues. The first problem that occurs is a heavy build up of wasted feed. This can cause problems for some no-till drills in the spring and can delay plant emergence. The second problem is the concentration of manure deposited in

one area. The manure can be more evenly distributed across the field if the feeding area is moved. The final problem that may be observed is compaction. This can lead to muddy areas again and issues with spring planting.

Winter feeding area management must also consider the remaining congregation area and proximity to surface water. Permanent congregation areas (water access) will lead to a concentration of manure. Accumulated manure must be removed in a timely manner and properly applied to cropland. This non-vegetated area is more prone to runoff and erosion. Therefore, a grassed buffer area must exist between this area and surface water or a draw/drainageway running into surface water.

Properly managed winter feeding areas contain the nutrients and pollutants produced on the operation, reduce soil erosion, keep clean water clean and help improve the environment.

Teresa Dvorak

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## AFO School February 12th

NDSU Extension Service, in conjunction with the ND Department of Health, will be holding a one day workshop for owners and operators of large concentrated feeding operations (CAFO's) on February 12<sup>th</sup>, 2010. The program will start at 10:00a.m. and end at 3:00p.m.

The meeting will be hosted in the Burleigh County Extension Office, but will be connected to a number of other NDSU Extension Service locations via

video network. IVN sites include: the North Central (Minot), Carrington, and Langdon Research Extension Centers. More sites are being sought as well.

Topics for the event include: CAFO regulation update, Manure/soil testing and using their results to properly apply manure, and Pen maintenance.

More information will be available shortly. To register or for more infor-

mation contact Chris Augustin at (701) 652-2951 or [chris.augustin@ndsu.edu](mailto:chris.augustin@ndsu.edu). Updates will also occur on the Nutrient Management Website: <http://www.ndsu.edu/nm>.

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## Discovery Farms

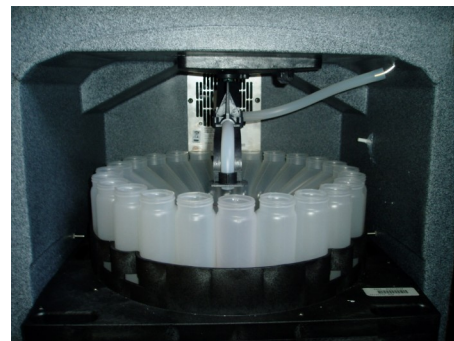
North Dakota Discovery Farms are research projects that monitor water quality. Three sites are currently running. They are near Dazey, Embden, and Underwood. The Dazey and Underwood sites are adjacent to animal feeding operations, while the Embden site monitors tile drainage. It allows producers to make management decisions for their operation based on collected data. After improvements are made data can again be collected.

Each Discovery Farm is equipped with an automated water collection site that detects runoff events and samples water systematically during and after the event.

The water samples can be tested for various contaminants. The automated sampler allows the construction of a water quality time line. Collected and analyzed data is shared with producers to assist them with making

better management decisions based on a site's findings.

Discovery Farms are partnered with North Dakota State University, North Dakota Department of Health, and United States Geological Survey.



Automated water sampler at a Discovery Farm site.

## Commentary from the CAFO Corral

All of the animal feeding operations that have been permitted by the North Dakota Department of Health in recent years have had a Nutrient Management Plan (NMP) at one time. All too often, however, that plan is probably filed away in the dark corner of a filing cabinet shortly after it is developed. All parts of the NMP should be kept up to date, but there are three very important pieces of information that department staff will ask for at every inspection.

1. Manure spreading records. This is as simple as "where, when and how much." Most crop producers keep good records when applying nutrients from commercial fertilizer, but they often overlook recording information when applying the nutrients from manure. Even if the tonnage of each load is not known,

keep track of the number of loads. Use the applicable sections from NDSU Extension publication NM-1306 *North Dakota CAFO Operators Record Book* to make sure you are keeping the required records.

2. Soil nutrient test results. Current soil tests really tell the story of how the manure nutrients are interacting with the crop. Sampling every year is recommended; however, soil tests are considered current if they were taken in the last three years (for all but the largest operations).

3. Manure nutrient test results. A manure sample should be taken when the manure is applied. Most soil test labs also analyze manure nutrients, so contact your agronomist to find out if the manure samples can be sent

with your regular soil tests. For specifics on how to take a manure sample, refer to NDSU Extension publication NM-1259 *Manure Sampling for Nutrient Management Planning*.

Make sure that the field identification is the same for all three items. It does not matter if a field is listed as "Field 7," "The NW 1/4 of Section 12," or "The Schmidt Place," as long as the manure records and soil tests use the same identification.

If you have any questions about what records are required or what the information means, department staff would be happy to visit with you at your convenience. Please contact our office at (701) 328-5210.

-Karl Rockeman-