

Nutrient Management News

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Special points of interest:

- ◆ **Do you need your manure sampled for nutrients? Give Chris (701-652-1951) or Teresa (701-483-2348) a call and we can help you out.**
- ◆ **Do you need manure applied? The Nutrient Management Website has a manure applicator directory**
- ◆ **Check out the Nutrient Management Website at www.ndsu.edu/nm for more information**
- ◆ **Email Chris at Chris.Augustin@ndsu.edu to receive this newsletter.**

A lot has been going on...



The coming spring thaw brings melting snow so remember to monitor containment pond levels and inspect dikes for erosion. It is important to prevent a discharge and apply pond effluent before a discharge occurs. Ideally you want to apply it on a dry soil (I know it's difficult to find in the spring), away from surface waters, on a vegetated area, gentle slopes, and spread it over as many acres as you can. If you have any issues or questions, you can call the ND Department of Health at 701-328-5225 or me at 701-652-2951.

Speaking of which, The North Dakota Department of Health Animal Feeding Operations Program has hired a new environmental engineer, Jeremy Lang. Jeremy grew up near Dawson, ND on a small grains and cow/calf pair operation. In May of 2010 he graduated

from NDSU with a B.S. in Agricultural and Bio-systems Engineering.

We have also started a new program that assists livestock producers with following their nutrient management plan. At the invite of a producer, a nutrient management specialist will sample various manures (cattle, sheep, horses, swine, etc...) for nutrients and pay for the laboratory fees. Once the results are received, specialists will assist producers with determining manure application rates. We are hoping to collect 100 samples this spring and 100 in the fall. Producers will remain anonymous and nutrient data from producers will be combined and used for a North Dakota manure nutrient factsheet. If you are interested in this program, please contact Chris (701-652-2952) or Teresa (701-483-2348).

A new publication, Bio-Secure Nutrient Management Practices is under final review and will be available in a few months. This publication covers topics such as, cleaning manure spreaders, pen cleaning, and other practices that will reduce infectious agents. This publication will be available on the nutrient management website (www.ndsu.edu/nm) once it is published.

Thanks for reading,

Chris

Solids Separators: Maintenance and Benefits

It's that time of the year again. Due to the amount of snow we received this winter, runoff and flooding events are almost unavoidable. With spring thaw occurring as we speak, it is important to keep in mind the importance of maintenance on the major components of your manure management systems. One of the components that will need attention is your solids separator. A poorly maintained

solids separator can cause poorly drained lots, plugged pipes or possibly even an overflow. The following are a few simple tasks that can be performed to ensure your system performs as designed.

- Remove accumulated ice and snow from the solids separator to allow proper flow.
- Inspect all screens, piping, and other components after all storm events. If any dam-

aged or deteriorated components are found, replace or repair them to the original condition immediately.

- Clear all components of accumulated debris and solids to allow for proper drainage and function of settling area.

The purpose of a solids separator is to separate the manure slurry or runoff into solids

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Cleaning Manure Handling Equipment

Animal manures contain many different pathogens that can pose health threats to animals and humans. Managing manures in a bio-secure manner can prevent and reduce the possibility of spreading diseases that can be found in manures.

Manure spreaders, compost turners, and loaders usually come close to animals and have direct contact with manure. Special care and cleaning of the manure handling equipment is a must. Be aware of cross-contamination as well. For example, if an end loader handles feed and is used infrequently to scrape a pen, the bucket and tires of the end loader need to be thoroughly cleaned and disinfected before handling feed again.

Keep in mind, cleaning the equipment is 90% of the job, while disinfecting is only 10% for proper equipment sanitizing.

These cleaning steps are

recommended:

1. Clean the equipment in a designated area away from the livestock.
2. Organic matter can serve as an infection reservoir and needs to be removed.
3. Power-wash the equipment. Hot water and detergents assists with the initial cleaning.
4. Scrub tight areas with a stiff hard bristled brush.
5. Allow the equipment to dry. Wet equipment can dilute the disinfectant.
6. Disinfect the equipment. It is very important to follow the instructions on the product label.
7. Allow the equipment to dry.

It is best to wash the equipment prior to entering a facility and leaving a facility. At the very least, the equipment should be washed prior to leaving the facility. This will also reduce the equipment's odor and pre-

vent pieces of manure being deposited on roads.

Clothing worn while handling manure and animal carcasses can be contaminated with and transport pathogens. Clothing worn during these tasks need to be washed properly. Washing clothes with detergent and dried at 140°F will kill most of the harmful pathogens. Footwear needs to be cleaned with soap and water followed by a disinfection regime.

The threat of pathogen outbreaks can be greatly reduced by thoroughly cleaning manure handling equipment and clothing after each use by following the label of the used cleaning product. Pathogens will always pose a threat to animal and human health. However, bio-security is greatly enhanced with proper manure handling equipment cleaning practices.

Chris Augustin



Initial power-washing of a compost turner. Photo courtesy of Anne Ehni, Wells County SCD Manager.

"cleaning the equipment is 90% of the job, while disinfecting is only 10% for proper equipment sanitizing"

Spring Pen Cleaning

The expression "spring cleaning" conjures images of spotless households, but it can apply to cattle operations, too.

Spring is a good time for producers to clean feedlots or areas of manure accumulation, once cattle are removed for summer grazing, said Kansas State University's Joel DeRouche. If not properly cleaned and maintained, confined feeding

pens and temporary feeding sites for wintering cows or winter-backgrounding calves are prime contributors to odor emissions, said DeRouche, who is an animal scientist with K-State Research and Extension. In addition, fly production from those sites is much greater when manure and wasted feed are present. This, in turn, creates a nuisance and the potential for

reduced animal performance for the remainder of the summer.

More tips on livestock production are available on K-State's Department of Animal Sciences and Industry Web site, <http://www.asi.ksu.edu>.

Mary Lou Peter-Blecha
Kansas State Extension
www.extension.org



Scraping and piling manure in a cattle pen.



Rolling up a manure covered sheet to put contents in a bucket for manure spreader calibration.

“Spreader calibration can save producers money and prevent pollution”



A maintained and cleaned out solids separator.

Manure Spreader Calibration Saves Money

Manure spreader calibration is an important aspect of nutrient management.

“With the increasing costs of fertilizer, it can save producers money and prevent pollution,” says Chris Augustin, nutrient management specialist at North Dakota State University’s Carrington Research Extension Center. Soil and manure testing and spreader calibration save money by letting producers know and control the amount of fertilizer applied to a field, which prevents overfertilization. Testing and calibration protect the environment by minimizing the loss of nitrogen to groundwater and phosphorous to surface water.

Spreader calibration can be completed as easily as weighing the loaded spreader before application, determining the spread area (acres) and weighing the empty spreader, according to Augustin.

If a truck scale is unavailable, then spreading the manure on a plastic sheet of known dimensions can be

almost as effective, he says. Follow these steps to use the plastic sheet calibration method:

- Anchor the sheet with rock or stakes.
- Apply the manure by driving over the sheet with the spreader. Weigh the sheet and manure in a plastic bucket (a 5-gallon pail will work well). To determine the tons of fertilizer you’d be applying per acre at your current application rate, multiply the pounds of manure on the sheet by 21.8, then divide by the square feet of the sheet. Augustin suggests using a 21.8-square-foot sheet to simplify your calculations. A sheet that is 3 feet by 7 feet 4 inches or 4 feet by 5 feet 6 inches is close to 21.8 square feet. Then all you need to do is weigh the sheet after applying the manure because the weight in pounds is equal to tons applied per acre with this size of sheet. Thus, if the manure on the sheet weighs 30

pounds, you’d be applying 30 tons of manure at your current application rate. He also recommends repeating the sheet method three or more times and averaging the results to account for spreader variability. Once you’ve determined your current application rate, if it’s not the right one, adjust the spreader and measure the application rate again until you achieve the desired rate.

To maintain the correct manure spreader calibration, be sure to record the tractor gear, engine’s revolutions per minute and spreader settings as you calibrate, Augustin says.

For more information on manure and determining the correct application rates for your crops, check out NDSU’s fertilization and manure publications at <http://www.ag.ndsu.edu/pubs/soilfert.html> and <http://www.ag.ndsu.edu/pubs/watanim2.html>.

Chris Augustin and
Ellen Crawford

From page 1. Solids Separators: Maintenance and Benefits

and liquids, making the two easier to handle as they are separate.

The liquids are transferred to a containment pond, while the solids are left behind for beneficial uses. By incorporating one into your design, you will receive many benefits as a result.

-The storage life of structures, such as containment ponds, will increase because the solids left behind will not take up storage space in the pond.

-Money can be saved due to the decreased need of me-

chanical solids removal from storage structures.

-The buildup of nutrients in the pond will be reduced along with the buildup of solids in transfer pipes and pumps.

-Odors will be reduced in the pond because the odor generation in the pond depends on the amount of odor producing organic substances remaining.

-The remaining nutrient rich organic solids can then be used for land application, bedding materials, and composts.

The solids separator is a very important piece in the manure management system. If you follow the guidelines provided above, your solid separator will function properly resulting in the desired benefits. If you have any questions or concerns, please contact us at www.ndhealth.gov/WQ or give the North Dakota Department of Health, Division of Water Quality a call at 701.328.5210.

Jeremy Lang
ND Department of Health

We are on the Web!

www.ndsu.edu/nm

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Manure Nutrient Sampling Ensures Yield Goals

Producers should keep in mind that soil testing, testing manure for nutrients and calibrating their manure spreader are vital for a successful nutrient management plan.

"Soil tests, manure tests and manure spreader calibration are three essential management practices that allow producers to meet crop yield goals by effectively managing manure," says Chris Augustin, area nutrient management specialist at North Dakota State University's Carrington Research Extension Center.

"Sampling and testing manure within a week of an application is very important to achieve accurate results," he adds.

"However, results are only as good as the sample taken."

Sampling solid manure involves taking about a dozen samples with a shovel from various locations in a pile and mixing those samples together in a plastic 5-gallon bucket. A composite sample then can be collected from the bucket and placed in a plastic container from a testing lab.

Labs that will conduct such tests include the NDSU Soil Testing Laboratory, (701) 231-8942; AGVISE Laboratories, (701) 587-6013; and DHIA Laboratories, (800) 369-2697.

Fill the plastic container about three-quarters full to provide room for air and expansion. Label the bottle, place it in a plastic bag, fill out all the information on the form from the testing laboratory and mail the sample. Liquid manure should be agitated for two to four hours before sampling. Collect about six samples by dipping into the manure container and pouring the liquid into a plastic 5-gallon bucket. The samples should be mixed and transferred into a plastic sampling bottle from a manure testing lab. As with solid manure samples, leave some space in the bottle.

Many labs recommend that after collecting the samples, they should be frozen or packed in ice and sent in a cooler. This pre-

vents the samples' chemical and biological properties from changing.

Labs also recommend sending samples early in the week to avoid weekend layovers and problems with maintaining sample integrity. Labs can test for many nutrients, but the minimum testing should be for total nitrogen, phosphorus and potassium, Augustin says. Testing manure for inorganic and organic nitrogen can lessen the guesswork that goes into making sure nutrients are available for crops.

If producers need assistance in calibrating their manure spreader, a NDSU Extension Service publication can help. "Manure Spreader Calibration for Nutrient Management Planning" (NM-1418) is available at county Extension offices or online at http://www.ndsu.edu/uploads/media/NM-1418_proof_2.pdf.

For more information on nutrient management, contact Augustin at (701) 652-2951 or chris.augustin@ndsu.edu, or visit the NDSU Nutrient Management Web site at <http://www.ndsu.edu/nm>

Chris Augustin and Ellen Crawford



A manure sample jar filled 3/4 full of compost for nutrient sampling.

Thanks for reading this issue of Nutrient Management News! 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.

Nutrient Management News is also available on the Nutrient Management Website (www.ndsu.edu/nm).