

LEM NEWS

Livestock Environmental Management Newsletter

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ND Custom Livestock Manure Haulers are out in full force, trying to stay ahead of the planters. If you're looking for a custom hauler, an updated public list is online at www.ag.ndsu.edu/lem.

Greetings!

As I write this I'm just getting done with "meeting season." It was a long one, folks. Initially, when I returned from my last-for-a-while overnight conference, I breathed a sigh of relief. Now I can get back into a routine. After going through all the emails and catching up on things that have been pushed to the back burner, I have time to reflect on things I learned while on the road at meeting with you.

While I'm a livestock girl at heart, I learn more about crop farming every winter and have come to appreciate the madness behind ***some of*** your methods. I learned more about how drills work and fertilizer placement and the importance of seed-to-soil contact than I thought I cared to know! I also immersed myself in some deep study about manure compost, resurrected my enjoyment of learning about metabolism and learned about some new technology and tools that will help me program more efficiently and effectively.

Among other new things is our new newsletter layout. While new is fun, consistency is key to being efficient and effective so from here on out, we'll be using this NDSU Extension newsletter format.

Something else that's new is the NDSU Extension website. You can find the new user-friendly version here: www.ag.ndsu.edu/Extension.

I plan to spend my summer working on new programming for the fall and winter. If you have suggestions for programming or questions about nutrient management, you can call 701-652-2951 or email Mary.Keena@ndsu.edu anytime. Have a great summer! – Mary Keena



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Decoration Day

May 27 is Memorial Day in the United States.

Decoration Day, as it was formerly called, is when we pause to remember those whose lives were taken in service to the United State of America.

You may be taking the camper and boat out for the first time this season; fencing, because it's time for the cows and calves to get out of the calving area; planting (your field or garden) or maybe taking a much needed break if we received the rains that were predicted; or maybe today you're simply remembering a loved one that's no longer with you. In one way or another, each of us is affected by this day.

Memorial Day services will be held all around the state; some will be attended by more than 200 people and some will have 20 in the crowd. No matter the size, the significance is the same.

So between the hot dogs, fence clips, and seeds, take a couple minutes to remember why we celebrate this national holiday. Listen to the veteran tell the story about their friend who "never made it back" and be grateful for the opportunities we are granted.

More information about the history of Memorial Day can be found here:
<http://www.usmemorialday.org/>.

From CenterPoints, May 28, 2018.

Waste to Worth 4

NDSU Extension a co-host

North Dakota State University Extension (NDSU Extension) had the pleasure of co-hosting the 2019 Waste to Worth Conference. This conference is held every two years and is primarily sponsored by the [Livestock and Poultry Environmental Learning Community](#).

This year's conference was held in April on the University of Minnesota's Minneapolis Campus. The conference started with three tour options: Unique Agriculture, Sustainable Livestock or Organic Fertilizers and Ag By-Products. These tours show how the host-state's residents are taking something that is considered waste by many and turning it into something useful and sustainable.



NDSU Extension was the leader for the proceedings and program committee. There were 57 oral presentations, 9 poster presentations and 10 students participated in the Ron Sheffield Memorial Student Poster Competition. A highlight of this conference is that students interact all week with professionals. There were 150 participants from Idaho to Ohio, Florida to Washington, across the nation.

Presenters from NDSU:

[Phosphorus Contribution from Distillers Grains to Corn and Wheat in North Dakota \(Jasper Teboh\)](#)

[Synergetic Process Parameters Interaction in Solid State Anaerobic Co-Digestion \(Ademola Ajayi-Banji\)](#)

[Effect of Pretreatment and Agitation Frequency on Methane Yield in Solid State Anaerobic Codigestion of Dairy Manure and Corn Stover \(Ademola Ajayi-Banji\)](#)

[Adding Color to Your Program—People and Personalities \(Mary Keena\)](#)

You can find all of the proceedings online:
<https://lpehc.org/waste-to-worth/waste-to-worth-2019/>.

W2W4 Ron Sheffield Memorial Student Poster Competition winners: (left) Mara Zelt, Third Place, University of Nebraska-Lincoln; (middle) Kirsten Sharpe, First Place, University of Minnesota; (right) Brigit Lozinski, Second Place, University of Minnesota.



NDDEQ Transition

New State Agency

If you've been hearing rumbling about the North Dakota Department of Health "changing their name" there is a little truth to that. The folks we work with in Air Quality, Chemistry, Municipal Facilities, Waste Management and Water Quality not only have a new name, they have a new agency! You can read about the specifics from this excerpt below from their website and find all the details here: https://deq.nd.gov/publications/transition/2017-10_ND%20WATER_New%20DEQ.PDF.

From the North Dakota Department of Environmental Quality website:

"North Dakota Governor Doug Burgum has signed legislation separating the Environmental Health Section from the North Dakota Department of Health to create a standalone Department of Environmental Quality (DEQ), to be completed by July 2019. The DEQ will administer and enforce the same environmental protection programs as the existing Environmental Health Section, which has been headed since 2002 by David Glatt.

The establishment of a DEQ streamlines government and acknowledges the importance of environmental protection in North Dakota by elevating that responsibility to a cabinet-level agency whose Director is appointed by and reports directly to the Governor. The section currently has about 174 positions, including engineers, scientists, chemists, microbiologists and administrative support staff.

The DEQ will be overseen by a new 13-member Environmental Review Advisory Board, created through the consolidation of the existing Air Quality Advisory Board and Water Pollution Control Advisory Board. The new board will consist of the state engineer, state geologist, Director of the state Game and Fish Department, and 10 members appointed by the Governor. The board also reserves three spots for representatives of crop agriculture, the livestock industry, and agronomy/soil sciences."



SOIL HEALTH NEXUS Soil Health Nexus Debuts New Soil Health Resource

The Soil Health Nexus team is making it easier than ever to access valuable soil health information through their newly released [Soil Health Toolbox](#). To date, the team has released resources on conducting on-farm-research that incorporates soil health, and is working on resources on 1) how soil health impacts water quality and flow through the landscape, and 2) understanding and measuring soil's physical, chemical and biological properties.

The Toolbox provides critical soil health information and resources to extension educators, farm advisors and state and federal agency personnel. In particular, the [on-farm research portion](#) of the Toolbox helps answer four questions:

- **Should I host on-farm research?** Here you can find information on finding the right farmer cooperators, sound research design, and on farm-research opportunities.
- **How can I successfully implement on-farm research?** Once you have decided to do on-farm research, you'll need tools to help you along the way. The Toolbox includes tips and sample protocols for planning your field experiment, measuring and gathering data, and collecting and analyzing that data.
- **How can I share results of on-farm research?** Once you have results, the next step is sharing them! The Nexus provides advice on how to report results, plan a field day, demonstrate soil health principles under field conditions, and evaluate your field day's impact.
- **Should I involve citizen scientists?** Involving citizens is a great way to educate and involve your community. The Toolbox provides information on what groups to include, what the activities to include, and how to be a part of a larger project.

Members of the Soil Health Nexus along with extension partners across the region, [Soil Health Partnership](#), and [Practical Farmers of Iowa](#), have included a survey link on each page of the Toolbox for viewers to provide input, suggest changes, or provide additional resources for inclusion.

Other components of the Toolbox will be based on the results of a comprehensive soil health survey distributed to producers, state and federal agency personnel, extension educators, and advisors last year.

Access the Toolbox on the [Soil Health Nexus website](#). Results from the soil health survey will be posted in the coming months. And make sure to join the team's [mailing list](#) to get the all latest updates on their work! - [Anne Nardi](#)



Keeping North Dakota's streams, rivers and lakes clean demands more than dockside diligence. Even if you don't live along the shores or banks, you may be contributing to the pollution of lakes and streams because they are larger than their shorelines. They're part of a system called a watershed.

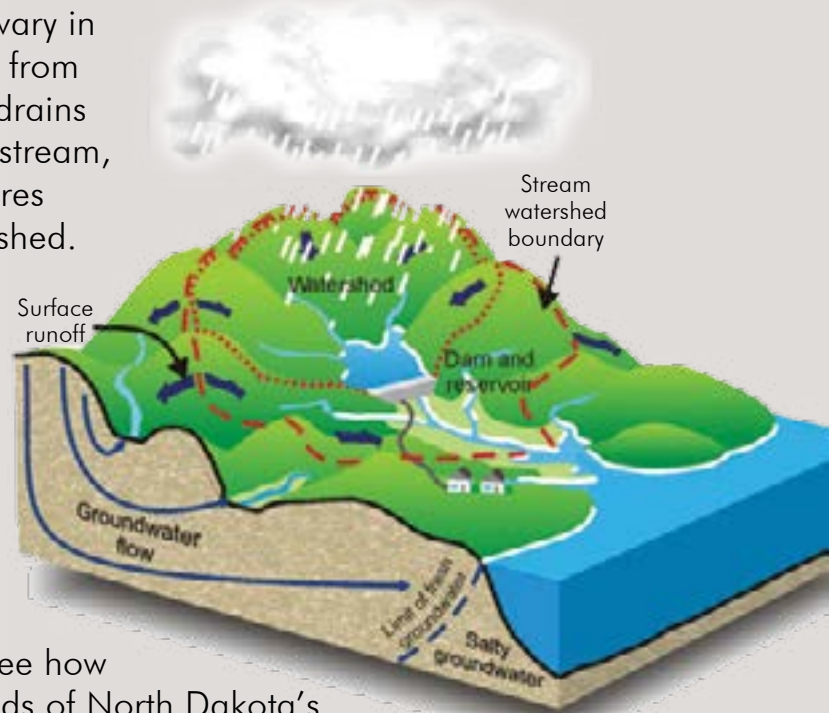
WHAT IS A WATERSHED?

Water from rainfall or snowmelt that doesn't evaporate or soak into the soil runs into ditches, streams, wetlands or lakes. The area of land from which the water drains is called a watershed.

Watersheds vary in size. If water from a few acres drains into a small stream, those few acres are its watershed.

This stream and others like it run into larger streams or lakes. Small watersheds make up larger ones.

It's easy to see how the watersheds of North Dakota's lakes can have land areas many times larger than their lake surfaces.



The Mississippi River watershed covers 58% of North Dakota and 41% of the United States.

HOW DO YOU FIT INTO YOUR WATERSHED?

Wherever you live in North Dakota you are in a watershed. Your watershed may be covered with towns, industrial areas or farmland. Any excess nutrients, sediments and pollutants in your watershed are carried by runoff to surface waters.

You and the other people

WATERSHED MANAGEMENT TIPS

Minimize erosion by adopting practices that slow the flow of water over your property.

Reduce excess nutrients that could wash off your land.

Collect waste oil and other automotive wastes to be recycled, rather than letting them run on to the ground.



No-till practices improve soil health and water quality. Photo credit No-Till Farmer



Rain gardens are shallow depressions that capture and treat stormwater naturally. Photo credit U.S. Environmental Protection Agency

Feel free to use this information, but please credit the North Dakota Department of Environmental Quality.

Continued from previous page

who live in the watershed potentially influence the water quality in nearby streams and lakes, depending on how careful you are in your day-to-day activities.

Understanding that actions on land impact water quality should lead you to cast a more critical eye on many common activities such as gardening, lawn care, automobile maintenance, farming and ranching. These and other activities can contribute excess nutrients, sediment and pollutants to the streams, rivers or lakes in your watershed.

WHAT CAN YOU DO FOR YOUR WATERSHED?

In rural areas you can:

- Practice building soil health.
- Use conservation tillage.
- Practice crop rotation.
- Install grassed waterways.
- Plant filter strips around feedlots.
- Retire highly erodible land.
- Practice sound pesticide and fertilizer use.
- Recycle agricultural chemical containers.
- Construct diversion dikes or channels around feedlots.
- Recycle fluids from vehicles and machinery.

In urban areas you can:

- Maintain plant cover to reduce runoff.
- Mulch gardens and exposed soil.
- Terrace land to slow runoff.
- Direct runoff to areas where it will soak into the soil.
- Minimize pavement and impermeable surfaces.
- Minimize soil disturbance at construction sites.
- Maintain septic systems.
- Use low- or no-phosphate soaps.
- Recycle automotive fluids.

Soil Health Not Just a Trending Topic

Soil Health Nexus Blog March 25, 2019



Leslie Johnson, Animal Manure Management Coordinator, UNL Northeast Research & Extension Center, Concord, NE.

Talk to any farmer and you'll learn there's more to raising crops than just planting and harvesting. There's a lot of science, time input, and decisions that go into being a profitable crop farmer. At the right time, you plant at the perfect depth and population (the number of seeds per acre). You fertilize your field to make sure the crops have enough nutrients (food) to grow the most grain possible (highest yield). You do your best to control the weeds, which compete for nutrients and water that the crop needs, and check for pests

that can reduce yields. You worry about whether the rain will come when it is needed or when you'll need to turn on the pivot. Finally, fall comes and you're ready to harvest. It's fulfilling to see the trucks and wagons fill up and you know that you've made it through this year.

But there's no rest for the farmer. Many times before harvest ever begins, a farmer is already thinking about next year. "How much fertilizer will I need? What variety of corn will I plant? What weeds are going to be a problem so I can figure out how to manage them?"

Many of us take the soil we stand on for granted, including myself. I mean, it's everywhere – especially on my carpet with two boys in my house. However, without soil, we can't grow crops. Farmers know that soil is a critical part of farming, and making sure that soil can continue to grow crops for many

years to come is at the forefront of every farmer's mind – sometimes without even realizing it.

When you hear about programs focused on soil health you might wonder, "What in the world are they talking about? Dirt isn't alive." Well, it's true that the soil itself isn't living, but if you listen to scientists in the ag community, they talk about a soil solution. The soil solution includes not only the soil particles, but also water, air, and all of the organic matter and living organisms within the soil. Now that, is certainly living; it's a whole other world down there! Like we as humans live with water, air, and other animals above ground, so do the worms, insects and microorganisms below ground. It's that ecosystem that people are referring to when talking about soil health.

All of these living organisms contribute to growing a bumper crop. Worms and burrowing insects break down the organic matter (crop residues like leaves and stems) into smaller pieces and incorporate it into the soil. Their burrows also act as channels for water to flow into the soil rather than running off when it rains a lot. Bacteria and fungi help to degrade that organic matter even more so that the nutrients in the crop residue are in forms that are available for future crops to use as "food". All of these things impact the amount of water and nutrients the soil can hold and therefore how much plant life (crops) it can grow.

I help lead a group of folks across 12 states in the North Central part of the United States called the Soil Health Nexus. The Soil Health Nexus was initiated in 2015 and includes representatives from land-grant universities, SARE, InterTribal Ag Council, National Soil Health Partnership, and NRCS. The goals of the group are to:

- increase access to soil health-related research and educational programs,
- increase critical soil health knowledge and skills,
- promote conservation system practices that enhance soil health and associated ecosystem services, and
- provide long-term organizational support for soil health research and education.

So when farmers go to workshops or study websites like <http://soilhealthnexus.org> to learn more about soil health, they're looking for ways to help the organisms in the soil flourish with healthy populations, thus making their crops grow better, not just this year, but for years to come.

Save The Date

June 18

ND Stockmen's Association Feedlot Tour.

June 19

Crop Management Field School, Carrington REC.
Preregistration required.

July 16

NDSU Carrington REC Field Day

Sudden Death in Animals

Cyanobacteria Poisoning

Drinking water from stagnant ponds and dugouts during hot, dry weather can cause sudden death in animals. This water can contain certain species of cyanobacteria, widely known as blue-green algae.

Toxic cyanobacterial blooms occur because of favorable conditions, including hot, sunny days and warm, nutrient-rich water. The blooms commonly occur in late summer and early autumn. Under favorable conditions, bacterial numbers multiply rapidly, doubling in one day or less.

Blooms usually do not last long. Rain, heavy winds or cooler temperatures often inhibit growth or break up the blooms, mixing the bacteria into the water body within a few days.

However, under continuing favorable conditions, blooms may last for several weeks. Cyanobacteria can survive under ice and throughout winter conditions.

Blue-green algae often occurs in stagnant ponds or dugouts with elevated nutrient levels, forming large colonies that appear as scum on or just below the water surface.



Photo courtesy of the Walsh County Soil Conservation District

The formation of toxic blooms is unpredictable. Live cyanobacteria is green and turns blue after it dies and dries on the surface or shoreline. The presence of bacteria often may be determined by a bluish tinge to the water. Concentrations of bacteria often are bluish green but may vary from dark green to brownish green, depending on the total bacterial population.

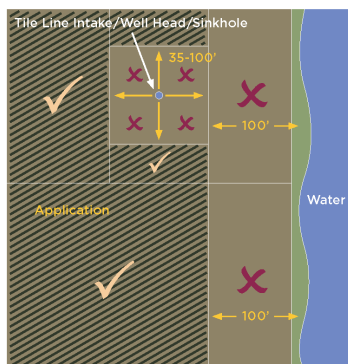
More information

Symptoms, diagnosis, prevention and control information can be found here: <https://www.ag.ndsu.edu/publications/livestock/cyanobacteria-poisoning-blue-green-algae>.

North Dakota Manure Application Setbacks

As stated in the USDA-NRCS 590 Standard and N.D. Livestock Program Design Manual:

- Land application shall not occur during rainfall events, except to prevent the catastrophic failure of a storage structure.
- Manure shall not be applied to frozen, snow-covered or saturated soils if there is a likelihood of runoff.
- Manure can be land-applied during frozen conditions provided runoff is contained and does not drain off during spring runoff.
- When applying on frozen ground, consider land with less than 6 percent slope where stubble or vegetative cover is present and there is less than 8 inches of snow.



Application here requires incorporation within 8 hours.
1/2 Mile

Stubble/Vegetative Cover on Frozen Ground



Setbacks to Consider When Applying Manure

From the [ND Livestock Design Manual](#)

On land controlled by the operator, manure shall not be applied closer than 100 feet to any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads or other conduits to surface waters, unless:

- A 35-foot wide vegetated buffer on which there are no applications of manure is used;
- The facility's owner/operator demonstrates that a setback or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equal to or greater than the reductions achieved by the 100-foot setback.

Register Now for the North American Manure Expo

Updated Biosecurity Protocols in Place

REGISTER NOW

Wednesday, July 31, 2019

TOURS, AGITATION DEMO & INDUSTRY SEMINARS

8:00 to 8:30am CST (9:00 to 9:30am EST): Tour registration and bus boarding

8:45am to Noon: Farm Tours (paid, pre-registration required, transportation & lunch included)

- Tour #1 : Dairy
- Tour #2 : Poultry/Beef
- Tour #3 : Swine

Noon: Manure Expo Grounds and Tradeshow Opens

1:00 to 4:00pm: Agitation Demo

4:00 to 6:00pm: Industry Presentations

8:00pm: Grounds close

Thursday, August 1, 2019

SEMINARS & FIELD APPLICATION DEMOS

7:30am CST (8:30 EST): Manure Expo and Tradeshow Opens

8:00 to 10:00am: Educational Seminars

11:00am to Noon: Field Demos
- Liquid Manure Applications

1:00 to 2:00pm: Educational Seminars

3:00 to 4:30pm: Field Demos
- Solid Manure Applications & Compost demonstrations

5:00pm: Grounds close



North American MANURE EXPO 2019
Putting nutrients back to work

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SAVE THE DATE

Vendors, demonstrations and sponsorship opportunities available.
Contact | Sharon Kauk • skauk@annexbusinessmedia.com • 519-429-5189 • ManureExpo.org

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